REGISTRATION
4787-23
Vol.7

Material to be added to an e-Jacket/Jacket

Reg. No. 4787-83

Description: Registration of Use on Bayer Ally Tol Cotton

1. ☐ **Placement within the e-Jacket/jacket:**
   - ☑ **Default: (chronological, top = newest)**
   - ☐ **File Location: (PDF page number, i.e., "before page 45")**

2. ☑ **Send to Data Extraction contractors this material:**
   - ☑ **Newly stamped accepted label**
   - ☐ **Notification**
   - ☐ **New CSF**
   - ☐ **Other:** _____

3. Attach this coversheet to the top of the material or jacket. It must be well organized and clipped together, NOT STAPLED. Then give the material with this coversheet to staff in the Information Services Center (Room S-4900).

Reviewer's Name: Vickie Walters

Phone: 703-305-5704 **Division:** RD/HB/PM-25

Date: 6/24/09

Created August 20, 2008

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES

AND

TOXIC SUBSTANCES

JUN 25 2009

Ms. Jennifer L. DeCarlo
Cheminova, Inc.
1600 Wilson Blvd., Suite 700
Arlington, VA 22209

Dear Ms. DeCarlo:

Subject: Glyfos X-Tra Herbicide (Add Use on Bayer GlyTol Cotton)
EPA Registration No. 4787-23
Label submitted June 2, 2009

The amendment referred to above, submitted in connection with registration under section 3 (c) (7) (A) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), is acceptable provided that you:

1. Submit/cite all data required for registration/reregistration when the Agency requires all registrants of similar products to submit such data.

2. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling:

a. On page 8, under Stage of Weeds, revise the last paragraph to read "Refer to Annual Weeds, Perennial Weeds, and Woody Brush and Trees Rate Table for **instructions** for specific weeds."

b. On pages 11 and 66, under Colorants and Dyes, revise the last sentence to read "Use colorants or dyes according to the manufacturer's in**structions**."

c. Add Group 9 Resistance Management language to this label

d. On page 32, under Citrus, Use Instructions, revise the first sentence to read "(The **instructions** below pertain to applications in Florida and Texas):

e. On page 36, under Renovation (rotating out of CRP), Site Preparation, revise the second sentence to read "Refer to Federal, state or local use guides for CRP renovation **guidance."**

f. On page 39, under Glyphosate Tolerant Crops, revise the second sentence to read "Do not combine these instructions with other **instructions** made for crop varieties..."

g. On page 40, under Note, revise the first sentence to read "The following **instructions** are based on a clean start at planting by using a burndown application or tillage to control existing weeds before crop emergence."

h. On page 42, under Glyphosate Tolerant Cotton, such as Roundup Ready or GlyTol, add a statement prohibiting the addition of a surfactant to the spray solution intended for application to cotton.

i. On page 70, revise the heading "Site and Use Recommendations" to read "Site and Use Application Information" as per the table of contents.

j On page 72, under General Non-crop Areas and Industrial Sites" delete the phrase "other public areas and similar non-crop sites" and replace with a list of specific use sites.

k. There are several areas of the label where the section entitled "General Non-Crop Areas and Industrial Sites" is referenced for additional information. Confirm that this section provides necessary information. If this section does not provide information intended, either delete or modify as necessary.

3. Submit one copy of your final printed labeling before you release the product for shipment.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6 (e). Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions.

Amended labeling supersedes all previously approved ones. A stamped copy of labeling is enclosed for your records.

Enclosure

Sincerely,

James A. Tompkins
Product Manager 25
Herbicide Branch
Registration Division (7505P)

Glyfos® X-TRA Herbicide

Avoid contact of herbicide with foliage, green stems, exposed non-woody roots or fruit of crops (except as specified for individual glyphosate tolerant crops), desirable plants and trees, because severe injury or destruction may result.

Herbicide for glyphosate tolerant crops.

Selective broad-spectrum weed control in glyphosate tolerant crops. Non-selective, broad-spectrum weed control for many cropping systems, farmsteads and Conservation Reserve Program acres.

Not all products listed on this label are registered for use in California. Check the registration status of each product in California before using.

[Optional marketing text: For Big Jobs and Tough Weeds Even Kills the Root! Glyphosate Plus Surfactant]

THIS IS AN END-USE PRODUCT. CHEMINOVA DOES NOT INTEND AND HAS NOT REGISTERED IT FOR REFORMULATION. SEE INDIVIDUAL CONTAINER LABEL FOR REPACKAGING LIMITATIONS.

Refillable Container Label Statement:

THIS IS AN END-USE PRODUCT. CHEMINOVA DOES NOT INTEND AND HAS NOT REGISTERED IT FOR REFORMULATION. IT IS INTENDED THAT REPACKAGING BE ONLY IN ACCORDANCE WITH A CHEMINOVA REPACKAGING OR TOLL REPACKAGING AGREEMENT.

Non-Refillable Container Label Statement:

THIS IS AN END-USE PRODUCT. CHEMINOVA DOES NOT INTEND AND HAS NOT REGISTERED IT FOR REFORMULATION OR REPACKAGING.

ACCEPTED
with COMMENTS
In EPA Letter Dated:
JUN 25 2009
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 4787-23

ACTIVE INGREDIENT:	
*Glyphosate (N–(phosphonomethyl) glycine) in the form of its isopropylamine salt	41.0%
INERT INGREDIENTS:	59.0%
TOTAL:	100%

* Contains 480 grams per liter or 4 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its isopropylamine salt. Equivalent to 356 grams per liter or 3 pounds per U.S. gallon of the acid, glyphosate.

KEEP OUT OF REACH OF CHILDREN

WARNING AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

IN CASE OF A MEDICAL EMERGENCY INVOLVING THIS PRODUCT, CALL TOLL FREE, DAY OR NIGHT 1-866-303-6950

Read the entire label before using this product.
Use only according to label instructions.

RECEIVED
6/2/09
by email

t

Read "DISCLAIMER" before buying or using.
If terms are not acceptable, return product unopened without delay.

SEE BOOKLET FOR ADDITIONAL PRECAUTIONARY STATEMENTS AND USE DIRECTIONS

EPA Reg. No. 4787-23

EPA Est. No. 39578-TX-1

NET CONTENTS:

Manufactured for:
Cheminova A/S
P.O. Box 9
Lemvig, Denmark

Authorized Representative
Cheminova, Inc.
P.O. Box 110566
One Park Drive, Suite 150
Research Triangle Park, NC 27709
www.cheminova.us.com

® Glyfos is a registered trademark of Cheminova

PRODUCT OF DENMARK

TABLE OF CONTENTS

Woody Brush and Trees

DISCLAIMER

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
KEEP OUT OF REACH OF CHILDREN
WARNING! AVISO!

Causes substantial but temporary eye injury. Harmful if inhaled or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before re-use.

FIRST AID

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a Poison Control Center or doctor for treatment advice.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a Poison Control Center or doctor for treatment advice.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a Poison Control Center or doctor for further treatment advice.

IF SWALLOWED: Call a Poison Control Center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a Poison Control Center or doctor. Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a Poison Control Center or doctor, or when going for treatment. You may also contact 1-866-303-6950 for emergency medical treatment information.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear: long sleeved shirt and long pants, shoes plus socks and protective eyewear. Follow manufacturer's instructions for cleaning / maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Wash thoroughly and put on clean clothing.

Domestic Animals: This product is considered to be relatively non-toxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

PHYSICAL OR CHEMICAL HAZARDS

Spray solutions of this product should be mixed, stored and applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined steel containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce

hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulations.

Agricultural Use Requirements

Use this product only in accordance with its labeling and the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water, is: coveralls, chemical resistant gloves such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber, shoes plus socks.

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep people and pets off treated areas until spray solution has dried.

FOR MORE INFORMATION, CALL TOLL-FREE
1-800-548-6113

STORAGE AND DISPOSAL

PESTICIDE STORAGE: Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, State or local procedures.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is destroyed.

CONTAINER DISPOSAL

Nonrefillable containers 5 gallons or less:

Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Then offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Nonrefillable containers 5 gallons or larger:

Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Then offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

GENERAL INFORMATION

Product Description

This product is a postemergence, systemic herbicide with no soil residue activity. It is generally non-selective and gives broad spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid. It may be applied through most standard industrial or field-type sprayers after dilution and thorough mixing with water or other carriers according to label instructions.

Ammonium sulfate, drift control additives or dyes and colorants may be used. See the **MIXING** section of this label for instructions.

Time to Symptoms

This product moves through the plant from the point of foliage contact to and into the root system. Visible effects on most annual weeds occur within 2 to 4 days, but on most perennial weeds may not occur for 7 days or more. Extremely cool or cloudy weather following treatment may slow activity of this product and delay development of visual symptoms. Visible effects are a gradual wilting and yellowing of the plant which advances to complete browning of above-ground growth and deterioration of underground plant parts.

Stage of Weeds

Annual weeds are easiest to control when they are small. Best control of most perennial weeds is obtained when treatment is made at late growth stages approaching maturity. Refer to the **ANNUAL WEEDS**, **PERENNIAL WEEDS** and **WOODY BRUSH AND TREES RATE TABLES** for recommendations for specific weeds.

Always use the higher rate of this product per acre within the specified range when weed growth is heavy or dense or weeds are growing in an undisturbed (non-cultivated) area.

Do not treat weeds under poor growing conditions such as drought stress, disease or insect damage, as reduced weed control may result. Reduced results may also occur when treating weeds heavily covered with dust.

Cultural Considerations
Reduced control may result when applications are made to annual or perennial weeds that have been mowed, grazed, or cut, and have not been allowed to regrow to the specified stage for treatment.

Rainfastness
Heavy rainfall soon after application may wash this product off of the foliage and a repeat application may be required for adequate control.

Spray Coverage
For best results, spray coverage should be uniform and complete. Do not spray weed foliage to the point of runoff.

Mode of Action
The active ingredient in this product inhibits an enzyme found only in plants and microorganisms that is essential to formation of specific amino acids.

No Soil Activity
Weeds must be emerged at the time of application to be controlled by this product. Weeds germinating from seed after application will not be controlled. Unemerged plants arising from unattached underground rhizomes or root stocks of perennials will not be affected by the herbicide and will continue to grow.

Biological Degradation
Degradation of this product is primarily a biological process carried out by soil microbes.

Tank Mixing
This product does not provide residual weed control. For subsequent residual weed control, follow a label-approved herbicide program. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used. Use according to the most restrictive label directions for each product in the mixture.

Buyer and all users are responsible for all loss or damage in connection with the use or handling of mixtures of this product with herbicides or other materials that are not expressly stated in this labeling. Mixing this product with herbicides or other materials not specified on this label may result in reduced performance.

Annual Maximum Use Rate
Except as otherwise specified in a crop section of this label, the combined total of all treatments must not exceed 8 quarts of this product per acre per year. For application in non-crop sites or in tree, vine, or shrub crops, the combined total of all treatments must not exceed 10.6 quarts of this product per acre per year. The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredient, whether applied as mixtures or separately. Calculate the application rates and ensure that the total use of this and other glyphosate or sulfosate containing products does not exceed state maximum use rate.

NOTE: Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences.

MIXING

Clean sprayer parts immediately after using this product by thoroughly flushing with water.

NOTE: REDUCED RESULTS MAY OCCUR IF WATER CONTAINING SOIL IS USED, SUCH AS VISIBLY MUDDY WATER OR WATER FROM PONDS AND DITCHES THAT IS NOT CLEAR.

Mixing with Water
This product mixes readily with water. Mix spray solutions of this product as follows: Fill the mixing or spray tank with the required amount of water. Add the required amount of this product near the end of the filling process and mix well. Use caution to avoid siphoning back into the carrier source. Use approved anti-back-siphoning devices where required by state or local regulations. During mixing and application, foaming of the spray solution may occur. To prevent or minimize foam, avoid the use of mechanical agitators, terminate by-pass and return lines at the bottom of the tank and, if needed, use an approved anti-foam or defoaming agent.

Tank Mixing Procedure
Always predetermine the compatibility of labeled tank mixtures of this product with water carrier by mixing small proportional quantities in advance.

Mix labeled tank mixtures of this product with water as follows:
1. Place a 20- to 35-mesh screen or wetting basket over filling port.
2. Through the screen, fill the spray tank one-half full with water and start agitation.
3. If ammonium sulfate is used, add it slowly through the screen into the tank. Continue agitation. Ensure that dry ammonium sulfate is completely dissolved in the spray tank before adding other products.
4. If a wettable powder is used, make a slurry with the water carrier, and add it SLOWLY through the screen into the tank. Continue agitation.
5. If a flowable formulation is used, premix one part flowable with one part water. Add diluted mixture SLOWLY through the screen into the tank. Continue agitation.
6. If an emulsifiable concentrate formulation is used, premix one part emulsifiable concentrate with two parts water. Add diluted mixture slowly through the screen into the tank. Continue agitation.
7. Continue filling the spray tank with water and add the required amount of this product near the end of the filling process.
8. Add individual formulations to the spray tank as follows: wettable powder, flowable, emulsifiable concentrate, drift control additive, water soluble liquid.

Maintain good agitation at all times until the contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed.
Keep by-pass line on or near the bottom of the tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh.

Refer to the **TANK MIXING** section of **GENERAL INFORMATION** for additional precautions.

Mixing for Hand-Held Sprayers
Prepare the desired volume of spray solution by mixing the amount of this product in water as shown in the following table:

Spray Solution

Desired Volume	Amount of Glyfos X-TRA					
	1/2 %	1 %	1 1/2 %	2 %	5 %	10 %
1 Gallon	2/3 oz.	1-1/3 oz.	2 oz.	2-2/3 oz.	6-1/2 oz.	13 oz.
25 Gallon	1 pt.	1 qt.	1-1/2 qt.	2 qt.	5 qt.	10 qt.
100 Gallon	2 qt.	1 gal.	1-1/2 gal.	2 gal.	5 gal.	10 gal.
2 tablespoons = 1 fluid ounce						

For use in knapsack sprayers, mix the specified amount of this product with water in a large container. Fill sprayer with the mixed solution.

Ammonium Sulfate
The addition of 1 to 2 percent dry ammonium sulfate by weight or 8.5 to 17 pounds per 100 gallons of water may increase the performance of this product, particularly under hard water conditions, drought conditions or when tank mixed with certain residual herbicides on annual and perennial weeds. The equivalent rate of ammonium sulfate in a liquid formulation may also be used. Ensure that dry ammonium sulfate is completely dissolved in the spray tank before adding herbicides. Thoroughly rinse the spray system with clean water after use to reduce corrosion.

NOTE: When using ammonium sulfate, apply this product at rates specified in this label. Lower rates will result in reduced performance.

Colorants or Dyes
Agriculturally-approved colorants or marking dyes may be added to this product. Colorants or dyes used in spray solutions of this product may reduce performance, especially at lower rates or dilutions. Use colorants or dyes according to the manufacturer's recommendations.

Drift Control Additives
Drift control additives may be used with all equipment types, except wiper applicators, sponge bars and Controlled Droplet Applicator (CDA) equipment. When a drift control additive is used, read and carefully observe cautionary statements and all other information appearing on the additive label. The use of drift control additives can affect spray coverage which may result in reduced performance.

APPLICATION EQUIPMENT AND TECHNIQUES

Do not apply this product through any type of irrigation system. This product may be applied with the following application equipment:

Aerial - Fixed Wing and Helicopter

Ground Broadcast Spray - Boom or boomless systems, pull-type sprayer, floaters, pick-up sprayers, spray coupes and other ground broadcast equipment.

Hand-Held and High-Volume Spray Equipment - Knapsack and backpack sprayers, pump-up pressure sprayers, handguns, handwands, mistblowers*, lances and other hand-held and motorized spray equipment used to direct spray onto weed foliage.

* THIS PRODUCT IS NOT REGISTERED IN CALIFORNIA OR ARIZONA FOR USE IN MISTBLOWERS.

Selective Equipment - Recirculating sprayers, shielded and hooded sprayers, wiper applicators and sponge bars.

Injection Systems - Aerial or ground injection sprayers.

Controlled Droplet Applicators (CDA) - Hand-held or boom-mounted applicators that produce a spray consisting of a narrow range of droplet sizes.

APPLY THESE SPRAY SOLUTIONS IN PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING DESIRED VOLUMES.

Aerial Equipment
DO NOT APPLY THIS PRODUCT USING AERIAL SPRAY EQUIPMENT EXCEPT UNDER CONDITIONS AS SPECIFIED WITHIN THIS LABEL.

Use the specified rates of this herbicide in 3 to 15 gallons of water per acre unless otherwise specified on this label. Unless otherwise specified, do not exceed 1 quart per acre. Refer to the individual use area

sections of this label for specified volumes, application rates and further instructions.

For aerial application in California and Fresno County California, refer to the **FOR AERIAL APPLICATION IN CALIFORNIA ONLY** and **FOR AERIAL APPLICATION IN FRESNO COUNTY CALIFORNIA ONLY** sections of this label for specific instructions, restrictions and requirements.

THIS **PRODUCT PLUS** dicamba **TANK MIXTURES MAY NOT BE APPLIED** BY AIR IN CALIFORNIA.

Ensure uniform application - To avoid streaked, uneven or overlapped application, use appropriate marking devices.

AERIAL SPRAY DRIFT MANAGEMENT

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outer most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.

2. Nozzles must always point backward, parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they should be observed.

Importance of Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see **Wind, Temperature and Humidity**, and **Temperature Inversions** sections of this label).

Controlling Droplet Size

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.

- **Pressure** - Use the lower spray pressures specified for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.

- **Nozzle Orientation** - Orienting nozzles so that the spray is released backwards, parallel to the airstream, will produce larger droplets than other orientations. Significant deflection from the horizontal will reduce droplet size and increase drift potential.

- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce larger droplets than other nozzle types.

- **Boom Length** - For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

- **Application Height** - Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential

(higher wind, smaller droplets, etc.).

Wind
Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. **NOTE:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

Temperature and Humidity
When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions
Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that move upwards and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas
The product should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Avoid direct application to any body of water.

Aircraft Maintenance
Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove residues of this product accumulated during spraying or from spills. PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. LANDING GEAR IS MOST SUSCEPTIBLE. The maintenance of an organic coating (paint), which meets aerospace specification MIL-C-38413, may prevent corrosion.

FOR AERIAL APPLICATION IN CALIFORNIA ONLY
Aerial applications of this product are allowed in the following situations:

1. In fallow and reduced tillage systems prior to the emergence or transplanting of labeled crops.

2. In alfalfa and pasture renovation applications.

3. Over-the-top applications in glyphosate tolerant corn and cotton. Refer to further label instructions for glyphosate tolerant corn and glyphosate tolerant cotton for specific application instructions for over-the-top applications in these crops.

4. Preharvest in alfalfa, corn, cotton, wheat, glyphosate tolerant corn and glyphosate tolerant cotton. Refer to the **Glyfos X-TRA** further label instructions for glyphosate tolerant corn and glyphosate tolerant cotton and for specific preharvest application instructions for each individual crop.

Do not plant subsequent crops other than those listed in this label for 30 days following application.

When applied as specified, under the conditions described, this product controls annual and perennial weeds listed in this label.

When tank mixing this product with 2,4-D for aerial applications, only 2,4-D amine formulations may be used. This tank mixture may be used for fallow and reduced tillage systems and alfalfa and pasture renovation applications only.

DO NOT EXCEED THE FOLLOWING MAXIMUM RATES WHEN MAKING APPLICATIONS BY AIR:

1 quart per acre	2 quarts per acre
	Alfalfa
Corn	
glyphosate ready Corn	
	Cotton
	Glyphosate ready Cotton
	Fallow
	Reduced tillage systems
	Pastures
Wheat	

Aerial Equipment
Use the specified rates of this product in 3 to 15 gallons of water per acre. Do not apply to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters.

AVOID DRIFT - DO NOT APPLY WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITIONS WHICH FAVOR DRIFT. DRIFT MAY CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH TREATMENT IS NOT INTENDED. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Use the following guidelines when aerial applications are made near crops or desirable perennial vegetation after bud break and before total leaf drop, and/or near other desirable vegetation or annual crops.

1. Do not apply within 100 feet of all desirable vegetation or crop(s).

2. If wind up to 5 miles per hour is blowing toward desirable vegetation or crop(s), do not apply within 500 feet of the desirable vegetation or crop(s).

3. Winds blowing from 5 to 10 miles per hour toward desirable vegetation or crop(s) may require buffer zones in excess of 500 feet.

4. Do not apply when winds are in excess of 10 miles per hour or when inversion conditions exist.

Coarse sprays are less likely to drift; therefore, do not use nozzles or nozzle configurations that dispense spray as fine spray droplets. Do not angle nozzles forward into the air-stream and do not increase spray volume by increasing nozzle pressure. Drift control additives may be used. When a drift control additive is used, read and carefully observe the cautionary statements and all other information appearing on the additive label.

Ensure uniform application - To avoid streaked, uneven or overlapped application, use appropriate marking devices. Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove residues of this product accumulated during spraying or from spills. PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. LANDING GEAR IS MOST SUSCEPTIBLE. The maintenance of an organic coating (paint) which meets aerospace specification MIL-C-38413 may prevent corrosion.

FOR AERIAL APPLICATION IN FRESNO COUNTY, CALIFORNIA ONLY
From February 15 through March 31 Only

Applicable Area

This supplement only applies to the area contained inside the following boundaries within Fresno County, California.

North: Fresno County line
South: Fresno County line
East: State Highway 99
West: Fresno County line

General Information

Always read and follow the label direction and precautionary statements for all products used in the aerial application.

Observe the following directions to minimize off-site movement during aerial application of this product. Minimization of off-site movement is the responsibility of the grower, Pest Control Advisor and aerial applicator.

Written Recommendations

A written recommendation MUST be submitted by or on behalf of the applicator to the Fresno county Agricultural Commissioner 24 hours prior to the application. This written recommendation MUST state the proximity of surrounding crops, and that conditions of each manufacturer's product label and this label have been satisfied.

Aerial Applicator Training and Equipment

Aerial application of this product is limited to pilots who have successfully completed a Fresno County Agricultural Commissioner and California Department of Pesticide Regulation approved training program for aerial application of herbicides. All aircraft must be inspected, critiqued in flight and certified at a Fresno County Agricultural Commissioner approved fly-in. Test and calibrate spray equipment at intervals sufficient to insure that proper rates of herbicides and adjuvants are being applied during commercial use. Applicator must document such calibrations and testing. Demonstration of performance at Fresno County Agricultural Commissioner approved fly-ins constitutes such documentation, or other written records showing calculations and measurements of flight and spray parameters acceptable to the Fresno County Agricultural Commissioner.

Applications at Night – Do not apply this product by air earlier than 30 minutes prior to sunrise and/or later than 30 minutes after sunset without prior permission from the Fresno County Agricultural Commissioner.

Note: For aerial application from April 1 through February 14, refer to the **FOR AERIAL APPLICATION IN CALIFORNIA ONLY** section of this label.

Ground Broadcast Equipment

Use the specified rates of this product in 3 to 40 gallons of water per acre as a broadcast spray. As density of weeds increases, spray volume should be increased within the specified range to ensure complete coverage. Carefully select proper nozzles to avoid spraying a fine mist. For best results with ground application equipment, use flat spray nozzles. Check for even distribution of spray droplets.

Hand-Held or High-Volume Equipment

Apply to foliage of vegetation to be controlled. For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff. Use coarse sprays only. For application rates and timing, refer to the **ANNUAL WEEDS—HAND-HELD OR HIGH-VOLUME EQUIPMENT** section of this product label.

Selective Equipment

This product may be applied through recirculating spray systems, shielded applicators, hooded sprayers,

wiper applicators or sponge bars after dilution and thorough mixing with water to listed weeds growing in any noncrop site specified on this label.

In cropping systems, hooded sprayers, shielded sprayers, and wipers may be used in row middles (in between rows of crop plants) where any dripping or leaking will not contact crop foliage. Such equipment must be capable of preventing all crop contact with herbicide solutions and operated without leakage of spray mists or dripping onto crop. Wipers over-the-top of crops may be used only when specifically stated in this product's labeling.

AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

Contact of the herbicide solution with desirable vegetation may result in damage or destruction. Applicators used above desirable vegetation should be adjusted so that the lowest spray stream or wiper contact point is at least 2 inches above the desirable vegetation. Droplets, mist, foam, or splatter of the herbicide solution settling on desirable vegetation may result in discoloration, stunting or destruction.

Applications made above the crops should be made when the weeds are a minimum of 6 inches above the desirable vegetation. Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. This may occur in dense clumps, severe infestations or when height of the weeds varies so that not all weeds are contacted. In these instances, repeat treatments may be necessary.

Recirculating spray system
A recirculating spray system directs the spray solution onto weeds growing above desirable vegetation, while spray solution not intercepted by weeds is collected and returned to the spray tank for reuse.

Shielded and Hooded Applicators
When applied under the conditions described in the following paragraphs for shielded and hooded applications, this product at specified rates will control those weeds listed in the **ANNUAL WEEDS RATE TABLE** and **PERENNIAL WEEDS RATE TABLE** sections of this label. A hooded sprayer is a type of shielded applicator where the spray pattern is fully enclosed including top, sides, front and back, thereby shielding the crop from the spray solution. Keep shields on these sprayers adjusted to protect desirable vegetation. When applying to crops grown on raised beds, ensure that the hood is designed to completely enclose the spray solution. If necessary, extend the front and rear flaps of the hoods to reach the ground in deep furrows. EXTREME CARE MUST BE EXERCISED TO AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

This equipment must be set up and operated in a manner that avoids bouncing or raising the hoods off the ground in any way. If the hoods are raised, spray particles may escape and come into contact with the crop, causing damage or destruction of the crop. Avoid operation on rough or sloping ground where the spray hoods might be raised off the ground.

Use hoods designed to minimize excessive dripping or run-off down the insides of the hoods. Use a single, low pressure/low drift flat-fan nozzle with an 80 to 95 degree spray angle positioned at the top center of the hood. Spray volume should be 20-30 gallons per acre.

These procedures will reduce the potential for crop injury:
- The spray hoods must be operated on the ground or skimming across the ground.
- Leave at least an 8 inch untreated strip over the drill row. For example, if the crop row width is 38 inches, the maximum width of the spray hood should be 30 inches.
- Maximum tractor speed: 5 miles per hour to avoid bouncing of the spray hoods.
- Maximum wind speed: 10 miles per hour.
- Use low-drift nozzles that provide uniform coverage within the treated area.

Crop injury may occur when the foliage of treated weeds comes into direct contact with leaves of the crop. Do not apply this product when the leaves of the crop are growing in direct contact with weeds to be treated. Droplets, mist, foam or splatter of the herbicide solution may contact the crop and cause discoloration, stunting or destruction.

Wiper Applicators
When applied under the conditions described in the following paragraphs, this product CONTROLS many weeds, including volunteer corn, Texas panicum, common rye, shattercane, sicklepod, spanishneedles and bristly starbur; and SUPPRESSES many weeds including Florida beggarweed, Bermudagrass, hemp dogbane, dogfennel, guineagrass, johnsongrass, milkweed, silverleaf nightshade, redroot pigweed, giant ragweed, smutgrass, sunflower, Canada thistle, milk thistle, vaseygrass, velvetleaf.

Wiper applicators are devices that physically wipe appropriate amounts of this product directly onto the weed.

Equipment must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation. Operate this equipment at ground speeds no greater than 5 mph. Performance may be improved by reducing speed in areas of heavy weed infestations to ensure adequate wiper saturation. Better results may be obtained if 2 applications are made in opposite directions.

Avoid leakage or dripping onto desirable vegetation. Adjust height of applicator to ensure adequate contact with weeds. Keep wiping surfaces clean. Be aware that, on sloping ground, the herbicide solution may migrate, causing dripping on the lower end and drying of the wicks on the upper end of a wiper applicator.

Do not use wiper equipment when weeds are wet.

Mix only the amount of solution to be used during a 1-day period, as reduced activity may result from use of leftover solutions. Clean wiper parts immediately after using this product by thoroughly flushing with water.

Do not add surfactant to the herbicide solution.

For Rope or Sponge Wick Applicators: Mix 1 gallon of this product in 2 gallons of water to prepare a 33% solution. Apply this solution to weeds listed above in this section.

For Panel Applicators: Solutions ranging from 33 to 100% of this product in water may be used in panel wiper applicators.

Injection Systems
This product may be used in aerial or ground injection spray systems. It may be used as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix this product with the concentrate of other products when using injection systems.

CDA Equipment
The rate of this product applied per acre by vehicle-mounted CDA equipment must not be less than the amount specified in this label when applied by conventional broadcast equipment. For vehicle-mounted CDA equipment, apply 2 to 15 gallons of water per acre.

For the control of annual weeds with hand-held CDA units, apply a 20% solution of this product at a flow rate of 2 fluid ounces per minute and a walking speed of 1.5 mph (1 quart per acre). For the control of perennial weeds, apply a 20 to 40% solution of this product at a flow rate of 2 fluid ounces per minute and a walking speed of 0.75 mph (2 to 4 quarts per acre).

Controlled droplet application equipment produces a spray pattern that is not easily visible. Extreme care must be exercised to avoid spray or drift contacting the foliage or any other green tissue of desirable vegetation, as damage or destruction may result.

ANNUAL AND PERENNIAL CROPS (Alphabetical)
NOTE: THIS SECTION GIVES GENERAL DIRECTIONS THAT APPLY TO ALL LISTED CROPS GROUPED ALPHABETICALLY BELOW. SEE THE INDIVIDUAL CROP CATEGORIES FOR SPECIFIC INSTRUCTIONS, PREHARVEST INTERVALS, AND ADDITIONAL PRECAUTIONS AND

RESTRICTIONS.

See the **GLYPHOSATE TOLERANT CROPS** section of this label for instructions for treating glyphosate tolerant crops.

TYPES OF APPLICATIONS
Chemical Fallow, Preplant Fallow Beds, Preplant, Preemergence, At-Planting, Hooded Sprayers in Row Middles, Shielded Sprayers in Row Middles, Wiper Applications in Row Middles and Post-Harvest Treatments.

GENERAL USE INSTRUCTIONS
Apply this product during fallow intervals preceding planting, prior to planting or transplanting, at-planting, or preemergent to annual and perennial crops listed in this label, except where specifically limited. For any crop not listed in this label, applications must be made at least 30 days prior to planting. Unless otherwise specified, weed control applications may be made according to the rates listed in the **ANNUAL WEEDS** and **PERENNIAL WEEDS** and **WOODY BRUSH AND TREES RATE TABLES** in this label. Repeat applications may be made up to a maximum of 8 quarts per acre per year.

Post-directed hooded sprayers and wiper equipment capable of preventing all crop contact with herbicide solutions may be used in mulched or unmulched row middles after crop establishment. Where specifically noted below, wipers may also be used above certain crops to control tall weeds. Refer to the **SELECTIVE EQUIPMENT** section of this label for essential precautions when using hooded sprayers or wipers to avoid crop injury caused by leakage of spray mists or dripping onto crops. Crop injury is possible with these applications and shall be the sole responsibility of the applicator.

The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredient, whether applied as mixtures or separately. Calculate the application rates and ensure that the total use of this and other glyphosate or sulfosate containing products does not exceed stated maximum use rate.

GENERAL PRECAUTIONS, RESTRICTIONS
Avoid contact of herbicide with foliage, green shoots or stems, bark, exposed roots (including those emerging from plastic mulch), or fruit of crops because severe injury or destruction may result. When making preemergence and at planting applications, applications must be made before crop emergence to avoid severe crop injury. Broadcast applications made at emergence will result in injury or death to emerged seedlings. Apply before seed germination in coarse sandy soils to further minimize the risk of injury. Unless otherwise specified in this product's labeling, treatments with selective equipment including wipers and hooded sprayers must be made at least 14 days prior to harvest. Post-harvest or fallow applications must be made at least 30 days prior to planting any non-labeled crop. See **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for additional information.

In crops where spot treatments are allowed, do not treat more than 10 % of the total field to be harvested. The crop receiving spray in treated area will be killed. Take care to avoid drift or spray outside the target area for the same reason.

For broadcast postemergent treatments, do not harvest or feed treated vegetation for 8 weeks following application, unless otherwise specified.

Cereal and Grain Crops
LABELED CROPS: Barley, Buckwheat, Millet (pearl, proso), Oats, Rice, Rye, Quinoa, Teff, Teosinte, Triticale, Wheat (all), Wild Rice.

PRECAUTIONS, RESTRICTIONS: Do not treat rice fields or levees when field contains water.

TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: Red Rice Control Prior to Planting Rice, Spot Treatment (except rice), Preharvest (Feed Barley and Wheat only), Over-the-Top Wiper Applications (Feed Barley and Wheat only).

Preplant, Preemergence and At-planting
USE INSTRUCTIONS: This product may be applied before, during or after planting of cereal crops. Applications must be made prior to emergence of the crop.

Red rice control prior to planting rice
USE INSTRUCTIONS: Apply 1.5 quarts of this product in 5 to 10 gallons of water per acre. Flush fields prior to application to obtain uniform germination and stand of red rice. Make application when the majority of the red rice plants are in the 2-leaf stage and no more than 4 inches tall. Red rice plants with less than 2 true leaves may be only partially controlled.

PRECAUTIONS, RESTRICTIONS: Avoid spraying during low humidity conditions, as reduced control may result. Do not treat rice fields or levees when the fields contain floodwater. Do not re-flood treated fields for 8 days following application.

Spot Treatment (except rice)
USE INSTRUCTIONS: This product may be applied as a spot treatment in cereal crops. Apply this product before heading in small grains.

PRECAUTIONS, RESTRICTIONS: Do not treat more than 10% of the total field area to be harvested. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Postharvest
USE INSTRUCTIONS: This product may be applied after harvest of cereal crops. Higher rates may be required for control of large weeds, which were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

PRECAUTIONS, RESTRICTIONS: For any crop not listed on this label, applications must be made at least 30 days prior to planting the next crop. Allow a minimum of 7 days between treatment and harvest or feeding of treated vegetation.

Preharvest (Feed Barley and Wheat only)
USE INSTRUCTIONS: This product provides weed control when applied prior to the harvest of wheat or feed barley. For wheat, apply after the hard-dough stage of grain (30% or less grain moisture). For feed barley, apply after the hard-dough stage and when the grain contains 20% moisture or less. Stubble may be grazed immediately after harvest.

This product may be applied using either aerial or ground spray equipment. For ground applications, apply this product in 10 to 20 gallons of water per acre. For aerial applications, apply this product in 3 to 10 gallons of water per acre.

PRECAUTIONS, RESTRICTIONS: Do not apply more than 1 quart of this product per acre. Allow 7 days between application and harvest or grazing. Preharvest application is not recommended for wheat or barley grown for seed, as a reduction in germination or vigor may occur.

Over-the-Top Wiper Applications (Feed Barley and Wheat only)
USE INSTRUCTIONS: Wiper applications may be used in feed barley and wheat. To control common rye or cereal rye, apply after the weeds have headed and achieved maximum growth, when the rye is at least 6 inches above the wheat crop.

PRECAUTIONS, RESTRICTIONS: Allow at least 35 days between application and harvest. Do not use roller applicators.

Corn
TYPES OF CORN: Field corn, Seed corn, Silage corn, Sweet corn and Popcorn.

TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: Preharvest.
For glyphosate tolerant corn, see the **GLYPHOSATE TOLERANT CROPS** section of this label.

Preplant, Preemergence, At-planting
USE INSTRUCTIONS: This product may be applied alone or in a tank mixture before, during or after planting corn. Applications must be made prior to emergence of the crop.

TANK MIXTURES: Apply these tank mixtures in 10 to 20 gallons of water or 10 to 60 gallons of nitrogen solution per acre. The individual tank mix product must be registered for use on this site.

2,4-D	Degree Xtra®	Harness Xtra 5.6l
Aim	Distinct™	Lariat®
Atrazine	Dual Magnum™	Lasso®/Alachlor
Axiom™	Dual II Magnum™	Linex™/Lorox™
Balance™	Epic™	Marksman™
Banvel™/Clarity™	Frontier™/Outlook™	Micro-Tech®
Bicep Magnum™	Fultime™	Prowl™
Bicep II Magnum™	Guardsman™/Leadoff™	Python™
Bullet®	Harness®	Simazine
Degree®	Harness Xtra	Topnotch™

For difficult-to-control annual weeds such as fall panicum, barnyardgrass, crabgrass, shattercane and broadleaf signalgrass up to 2 inches tall, and Pennsylvania smartweed up to 6 inches tall, apply this product at 2 pints per acre in these tank mixtures. For other labeled annual weeds, apply 1.5 to 2 pints of this product per acre when weeds are less than 6 inches tall, and 2 to 3 pints when weeds are over 6 inches tall. When using nitrogen solutions are the carrier, use rate may need to be increased for acceptable weed control.

PRECAUTIONS, RESTRICTIONS: Applications of 2,4-D or dicamba must be made at least 7 days prior to planting corn.

For Southern states, do not apply in nitrogen solutions to tough-to-control grasses such as barnyardgrass, fall panicum, broadleaf signalgrass, annual ryegrass and any perennial weeds. The area covered by this recommendation includes from Route 50 South in Illinois and Indiana and the following states: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, New Jersey, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia.

Hooded sprayers
USE INSTRUCTIONS: This product may be used through hooded sprayers for weed control between the rows of corn. Only hooded sprayers that completely enclose the spray pattern may be used. See additional instruction for the use of hooded sprayers in the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label.

PRECAUTIONS, RESTRICTIONS: Corn must be at least 12 inches tall, measured without extending leaves. Contact of this product in any manner to any vegetation to which treatment is not intended may cause damage. Such damage shall be the sole responsibility of the applicator. Do not apply more than 1 quart of this product per acre for each application and no more than 3 quarts per acre per year for hooded sprayer applications.

Spot Treatment
USE INSTRUCTIONS: For spot treatments, apply this product prior to silking of corn.

PRECAUTIONS, RESTRICTIONS: Do not treat more than 10 percent of total field area to be harvested. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Preharvest
USE INSTRUCTIONS: Make applications at 35% grain moisture or less. Ensure that maximum kernel fill is complete and the corn is physiologically mature (black layer formed). For ground applications, apply up to 3 quarts of this product per acre. For aerial applications, apply up to 2 quarts of this product per acre.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between application and harvest. Do not apply as a preharvest treatment for corn grown for seed, as a reduction in germination or vigor may occur.

Post-Harvest
USE INSTRUCTIONS: This product may be applied after harvest of corn. Higher rates may be required for control of large weeds which were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between treatment and harvest or feeding of treated vegetation.

Cotton
TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: Selective equipment, Spot treatment, Preharvest.
For glyphosate tolerant cotton, see the **GLYPHOSATE TOLERANT CROPS** section of this label.

Preplant, Preemergence, At-planting
USE INSTRUCTIONS: This product may be applied before, during or after planting cotton. Applications must be made prior to emergence of the crop.

Hooded Sprayer, Selective Equipment
USE INSTRUCTIONS: This product may be applied through hooded sprayers, recirculating sprayers, shielded applicators or wiper applicators in cotton. Allow at least 7 days between application and harvest.

PRECAUTIONS, RESTRICTIONS: See the **SELECTIVE EQUIPMENT** part of the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for information on proper use and calibration of this equipment.

Spot Treatment
USE INSTRUCTIONS: For spot treatment, apply this product prior to boll opening of cotton.

PRECAUTIONS, RESTRICTIONS: Do not treat more than 10% of the total field area to be harvested. The crop receiving spray in treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Preharvest
USE INSTRUCTIONS: This product provides weed control and cotton regrowth inhibition when applied prior to harvest of cotton. For weed control, apply at rates given in the **ANNUAL WEEDS, PERENNIAL WEEDS** and **WOODY BRUSH AND TREES RATE TABLE** sections of this label. Apply 1 pint to 2 quarts of this product per acre for cotton regrowth inhibition.

Up to 2 quarts of this product may be applied using either aerial or ground spray equipment. Apply after sufficient bolls have developed to produce the desired yield of cotton. Applications made prior to this time could affect maximum yield potential.

TANK MIXTURES: This product may be tank mixed with DEF® 6, Folex™, Ginstar or Prep™ to provide additional enhancement of cotton leaf drop.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between application and harvest of cotton. Do not apply as a preharvest treatment for cotton grown for seed, as a reduction in germination or vigor may occur. THE USE OF ADDITIVES, OTHER THAN THOSE LISTED ON THIS LABEL, FOR PREHARVEST APPLICATION TO COTTON IS PROHIBITED.

Fallow Systems
LABELED CROPS: This product may be applied during the fallow period prior to planting or emergence of any crop on this label.

TYPES OF APPLICATIONS: Chemical fallow, Preplant Fallow Beds, Aid-to-Tillage.

Chemical Fallow
USE INSTRUCTIONS: This product may be applied during the fallow period prior to planting or emergence of any crop listed on this label. This product may be used as a substitute for tillage to control annual weeds in fallow fields. Also, broadcast or spot treatments will control or suppress many perennial weeds in fallow fields. Ground or aerial application equipment may be used. Tank mixtures with 2,4-D and dicamba may be used. The individual tank mix product must be registered for use on this site. Applications up to 2 quarts per acre may be made by aerial application in fallow sites where there is sufficient buffer to prevent injury due to drift onto adjacent crops.

PRECAUTIONS, RESTRICTIONS: For any crop not listed on this label, applications must be made at least 30 days prior to planting. DO NOT APPLY DICAMBA TANK MIXTURES BY AIR IN CALIFORNIA.

Refer to specific product labels for crop rotation restrictions and cautionary statements of all products used in tank mixtures. Some crop injury may occur if dicamba is applied within 45 days of planting.

Preplant Fallow Beds
USE INSTRUCTIONS: This product may be applied to fallow beds prior to planting or emergence of any crop listed on this label. For any crop not listed on this label, applications must be made at least 30 days prior to planting. This product will control weeds listed in the **ANNUAL WEEDS**, PERENNIAL **WEEDS** and **WOODY BRUSH** TABLE sections of this label.

TANK MIXTURES: In addition, 12 fluid ounces of this product plus 2 to 3 fluid ounces of Goal™ 2XL per acre will control the following weeds with the maximum height or length indicated: 3" - common cheeseweed, chickweed, groundsel; 6" - London rocket, shepherd's purse.

16 fluid ounces of this product plus 2 to 3 fluid ounces of Goal 2XL per acre will control the following weeds with the maximum height or length indicated: 6" - common cheeseweed, groundsel, marestail *(Conyza canadensis)*, 12" - chickweed, London rocket, shepherd's purse.

Aid-to-Tillage
USE INSTRUCTIONS: This product may be used in conjunction with tillage practices in fallow systems or preplant to labeled crops to control downy brome, cheat, volunteer wheat, tansy mustard and foxtail. Apply 12 fluid ounces of this product in 3 to 10 gallons of water per acre. Make applications before weeds are 6 inches in height. Application must be followed by conventional tillage practices no later than 15 days after treatment and before regrowth occurs. Allow at least 1 day after application before tillage.

PRECAUTIONS, RESTRICTIONS: Tank mixtures with residual herbicides may result in reduced performance.

Grain Sorghum (Milo)
TYPE OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: Spot Treatment, Over-the-Top Wiper Applications, Preharvest.

Preplant, Preemergence, At-planting
USE INSTRUCTIONS: This product may be applied alone or in tank-mixture before, during or after planting grain sorghum. Applications must be made prior to emergence of the crop.

TANK MIXTURES: Apply these tank mixtures in 10 to 20 gallons of water or 10 to 60 gallons of nitrogen solution per acre. The individual tank mix product must be registered for use on this site.

Atrazine	Lariat

Bicep II Magnum	Lasso
Bullet	Micro-Tech
Dual II Magnum	

For difficult-to-control annual weeds such as fall panicum, barnyard grass, crabgrass, shattercane and broadleaf signalgrass up to 2 inches tall and Pennsylvania smartweed up to 6 inches tall, apply this product at 2 pints per acre in these tank mixtures. For other labeled annual weeds, apply 1.5 to 2 pints of this product per acre when weeds are less than 6 inches tall and 2 to 3 pints when weeds are over 6 inches tall. When using nitrogen solutions as the carrier, the use rate may need to be increased for acceptable weed control.

Spot Treatment, Over-the-Top Wiper Applications
USE INSTRUCTIONS: This product may be applied as a spot treatment in grain sorghum. Make spot treatments before heading of milo. This product may be applied with wiper applicators to control or suppress the weeds listed under **WIPER APPLICATORS** in the **SELECTIVE EQUIPMENT** section of this label.

PRECAUTIONS, RESTRICTIONS: For spot treatment, do not treat more than 10% of the total field area to be harvested. The crop receiving spray in treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

For wiper applicators, allow at least 40 days between application and harvest. Do not use roller applicators. Do not feed or graze treated milo fodder. Do not ensile treated vegetation.

Hooded sprayers
USE INSTRUCTIONS: This product may be applied through hooded sprayers for weed control between the rows of milo. Only hooded sprayers that completely enclose the spray pattern may be used. See additional instruction for the use of hooded sprayers in the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label.

Crop injury may occur when the foliage of treated weeds comes into direct contact with leaves of the crop. Do not apply this product when the leaves of the crop are growing in direct contact with weeds to be treated. Droplets, mist, foam or splatter of the herbicide solution may contact the crop and cause discoloration, stunting or destruction.

PRECAUTIONS, RESTRICTIONS: Milo must be at least 12 inches tall, measured without extending leaves. Treat before milo sends tillers between the drill rows. If such tillers are contacted with the spray solution, the main plant may be killed. Contact of this product in any manner to any vegetation to which treatment is not intended may cause damage. Such damage shall be the sole responsibility of the applicator. Do not graze or feed milo forage or fodder following applications of this product through hooded sprayers. Do not apply more than 1 quart of this product per acre per application and no more than 3 quarts per acre per year for hooded sprayer applications.

Preharvest
USE INSTRUCTIONS: Make applications at 30 percent grain moisture or less.

PRECAUTIONS, RESTRICTIONS: Do not apply more than 2 quarts of this product per acre. As with other herbicides that cause sudden plant death, avoid preharvest applications of this product to milo infected with charcoal rot as lodging can occur. Allow a minimum of 7 days between application and harvest of sorghum. Do not apply as a preharvest treatment for sorghum grown for seed, as a reduction in germination or vigor may occur. The use of this product for preharvest grain sorghum (milo) is not registered in California.

Post-Harvest
USE INSTRUCTIONS: This product may be applied after harvest of grain sorghum. Higher rates may be required for control of large weeds, which were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

This product may be applied to grain sorghum (milo) stubble following harvest to suppress or control regrowth. Apply 1 quart of this product per acre for control, or 1.5 pints of this product per acre for suppression.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between treatment and harvest or feeding of treated vegetation.

Herbs and Spices
LABELED CROPS: Allspice, Angelica, Star anise, Annatto (seed), Balm, Basil, Borage, Burnet, Camomile, Caper buds, Caraway, Black caraway, Cardamom, Cassia bark, Cassia buds, Catnip, Celery seed, Chervil (dried), Chive, Chinese chive, Cinnamon, Clary, Clove buds, Coriander leaf (cilantro or chinese parsley), Coriander seed (cilantro), Costmary, Culantro (leaf), Culantro (seed), Cumin, Curry (leaf), Dill (dillweed), Dill (seed), Epazote, Fennel seed (common and Florence), Fenugreek, White ginger flower, Grains of paradise, Horehound, Hyssop, Juniper berry, Lavender, Lemongrass, Lovage (leaf and seed), Mace, Marigold, Marjoram (including oregano), Mexican oregano, Mioga flower, Mustard (seed), Nasturtium, Nutmeg, Parsley (dried), Pennyroyal, Pepper (black and white), Pepper leaves, Peppermint, Perilla, Poppy (seed), Rosemary, Rue, Saffron, Sage, Savory (summer and winter), Spearmint, Stevia leaves, Sweet bay, Tansy, Tarragon, Thyme, Vanilla, Wintergreen, Woodruff, Wormwood.

TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: Over-the-Top Wiper Applications (Peppermint and Spearmint only), Spot Treatments (Peppermint and Spearmint only).

PRECAUTIONS, RESTRICTIONS: When applying this product prior to transplanting or direct-seeding crops into plastic mulch, care must be taken to remove residues of this product, which could cause crop injury, from the plastic prior to planting. Residues can be removed by a single 0.5-inch application of water, either by natural rainfall or via a sprinkler system. For some crops below, make applications 3 days before transplanting or planting.

Over-the-Top Wiper Applications, Spot Treatments (Peppermint and Spearmint Only)
USE INSTRUCTIONS: This product may be used as a spot treatment or wiper application in spearmint and peppermint. Apply spot treatments on a spray-to-wet basis with hand-held equipment, such as backpack and knapsack sprayers, pump-up pressure sprayers, hand-guns, hand-wands or any other hand-held or motorized spray equipment used to direct the spray solution to a limited area. In wiper applications, the applicator should be adjusted so that the wiper contact point is at least 2 inches above the crop. Weeds should be a minimum of 6 inches taller than the crop.

PRECAUTIONS, RESTRICTIONS: Allow at least 7 days between applications and harvest. Further applications may be made in the same area at 30-day intervals. In spot treatment applications, no more than 10% of the total field area to be harvested should be treated at one time. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside the target area for this reason. In wiper applications, contact of the herbicide solution with the crop may result in damage or destruction.

Oil Seed Crops
LABELED CROPS: Borage, Buffalo gourd (seed), Canola, Crambe, Flax, Jojoba, Lesquerella, Meadowfoam, Mustard (seed), Rape, Safflower, Sesame, Sunflower.
For glyphosate tolerant canola, see the **GLYPHOSATE TOLERANT CROPS** section of this label.

TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS**.

USE INSTRUCTIONS: This product may be applied before, during or after planting oil seed crops. Broadcast applications must be made prior to emergence of the listed oil seed crops. Wiper applicators or hooded sprayers may be used between the rows once the crop is established.

TANK MIXTURES: For sunflowers, a tank mixture with Prowl may be applied before, during or after planting in conventional tillage systems, into a cover crop, established sod or in previous crop residue.

PRECAUTIONS, RESTRICTIONS: Do not apply more than 2 quarts of this product per acre on canola. Do not apply more than 1 quart of this product per acre for sunflowers as a single preplant or preemergent application per year. Do not feed or graze sunflower forage following application of this product.

Soybeans
TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: spot treatment, preharvest, selective equipment.
For glyphosate tolerant soybeans, see the **GLYPHOSATE TOLERANT CROPS** section of this label.

Preplant, Preemergence and At-planting
USE INSTRUCTIONS: This product may be applied alone or in a tank mixture before, during or after planting soybeans. Applications must be made prior to emergence of the crop.

TANK MIXTURES: Apply these tank mixtures in 10 to 20 gallons of water per acre.

Aim™	Dual II Magnum	Micro-Tech
Amplify™	Firstrate™	Prowl
Assure II™	Flexstar™	Pursuit™
Authority™	Frontier™/Outlook™	Pursuit Plus
Boundary™	Fusion™	Reflex™
Canopy™	Gauntlet™	Scepter™
Canopy XL™	Lasso	Sencor™/Lexone™
Command™	Linex™	Squadron™
Command Xtra™	Lorox/Linuron	Steel™
Domain™	Lorox Plus™	Valor™
Dual Magnum		

This product may be tank mixed with 2,4-D or 2,4-DB. See the 2,4-D label for intervals between application and planting. The individual tank mix product must be registered for use on this site.

For difficult-to-control annual weeds such as fall panicum, barnyardgrass, crabgrass, shattercane and broadleaf signalgrass up to 2 inches tall, and Pennsylvania smartweed up to 6 inches tall, apply this product at 2 pints per acre in these tank mixtures. For other labeled annual weeds, apply 1.5 to 2 pints of this product per acre when weeds are less than 6 inches tall, and 2 to 3 pints when weeds are over 6 inches tall.

Spot Treatment
USE INSTRUCTIONS: For spot treatments, apply this product prior to initial pod set in soybeans.

PRECAUTIONS, RESTRICTIONS: Do not treat more than 10% of the total field area to be harvested. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Preharvest
USE INSTRUCTIONS: This product provides weed control when applied prior to harvest of soybeans.

Apply at rates given in the **ANNUAL WEEDS, PERENNIAL WEEDS** and **WOODY BRUSH AND TREES RATE TABLES**. This product may be applied using either aerial or ground spray equipment. Apply after pods have set and lost all green color. Care should be taken to avoid excessive seed shatter loss due to ground application equipment.

PRECAUTIONS, RESTRICTIONS: DO NOT APPLY MORE THAN 5 QUARTS PER ACRE OF THIS PRODUCT FOR PREHARVEST APPLICATIONS. DO NOT APPLY MORE THAN 2 QUART PER ACRE OF THIS PRODUCT BY AIR. Allow a minimum of 7 days between application and harvest of soybeans. Do not graze or harvest treated hay or fodder for livestock feed within 25 days of last preharvest application. (If the application rate is 1 quart per acre or lower, the grazing restriction is reduced to 14 days after last preharvest application.) Do not apply as a preharvest treatment for soybeans grown for seed, as a reduction in germination or vigor may occur.

Selective Equipment
USE INSTRUCTIONS: This product may be applied through recirculating sprayers, shielded applicators, hooded sprayers, wiper applicators or sponge bars in soybeans. Allow at least 7 days between application and harvest.

PRECAUTIONS, RESTRICTIONS: See the SELECTIVE EQUIPMENT part of the APPLICATION EQUIPMENT AND TECHNIQUES section of this label for information on proper use and calibration of this equipment.

Sugarcane
TYPES OF APPLICATIONS: Those listed in the ANNUAL AND PERENNIAL CROPS section.

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied in or around sugarcane fields or in fields prior to the emergence of plant cane.

PRECAUTIONS, RESTRICTIONS: Do not apply to vegetation in or around ditches, canals or ponds containing water to be used for irrigation.

Spot Treatment
USE INSTRUCTIONS: This product may be applied as a spot treatment in sugarcane. For control of volunteer or diseased sugarcane, make a 1% solution of this product in water and spray to wet the foliage of vegetation to be controlled. Volunteer or diseased sugarcane should have at least 7 new leaves.

PRECAUTIONS, RESTRICTIONS: Avoid spray contact with healthy cane plants since severe damage or destruction may result. Do not feed or graze treated sugarcane foliage following application.

Fallow Treatments
USE INSTRUCTIONS: This product may be used as a replacement for tillage in fields that are lying fallow between sugarcane crops. This product may also be used to remove the last stubble of ratoon cane. For removal of last stubble of ratoon cane, apply 4 to 5 quarts of this product in 10 to 40 gallons of water per acre to new growth having at least 7 new leaves. Allow 7 or more days after application before tillage. Ground or aerial equipment may be used. Applications up to 3 quarts per acre may be made by aerial application in fallow sites where there is sufficient buffer to prevent injury due to drift onto adjacent crops. Tank mixtures with 2,4-D and dicamba may be used. The individual tank mix product must be registered for use on this site.

Hooded Sprayers
USE INSTRUCTIONS: This product may be used through hooded sprayers for weed control between rows of sugarcane. See the APPLICATION EQUIPMENT AND TECHNIQUES section of this label for additional use instructions.

PRECAUTIONS, RESTRICTIONS: Do not allow treated weeds to come into contact with the crop. Droplets, mist, foam or splatter of the herbicide solution settling on the crop may result in discoloration, stunting or destruction. Such damage shall be the sole responsibility of the applicator.

Vegetable Crops
NOTE: THIS VEGETABLE CROPS SECTION GIVES GENERAL DIRECTIONS THAT APPLY TO ALL VEGETABLE CROPS LISTED ALPHABETICALLY BELOW. SEE THE INDIVIDUAL CROP CATEGORIES FOR SPECIFIC INSTRUCTIONS, PREHARVEST INTERVALS, PRECAUTIONS AND RESTRICTIONS.

TYPES OF APPLICATIONS: Chemical Fallow, Preplant Fallow Beds, Preplant, Preemergence, Prior to Transplanting Vegetables, At-Planting, Hooded Sprayers in Row Middles, Shielded Sprayers in Row Middles, Wiper Applications in Row Middles, and Post-Harvest, Directed Applications (Non-Bearing Ginseng), Over-the-Top Wiper Applications (Rutabagas Only).

PRECAUTIONS, RESTRICTIONS: When applying this product prior to transplanting or direct-seeding crops into plastic mulch, care must be taken to remove residues of this product, which could cause crop injury, from the plastic prior to transplanting. Residues can be removed by a single 0.5 inch application of water, either by natural rainfall or via a sprinkler system. Care should be taken to insure that the wash water flushes off the plastic mulch and does not enter transplant holes. Applications made at emergence will result in injury or death to emerged seedlings.

Avoid contact of herbicide with foliage, green shoots or stems, bark, exposed roots (including those emerging from plastic mulch), or fruit of crops because severe injury or destruction may result. When making preemergence and at-planting applications, applications must be made before crop emergence to avoid severe crop injury. Apply before seed germination in coarse sandy soils to further minimize the risk of injury. In crops with vines, hooded sprayer, shielded sprayer and wiper applications to row middles should be made prior to vine development otherwise severe injury or destruction may result. Unless otherwise specified in this product's labeling, treatments with selective equipment including wipers and hooded sprayers must be made at least 14 days prior to harvest. Post-harvest or fallow applications must be made at least 30 days prior to planting any non-labeled crop. See the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for additional information.

Brassica Vegetables
LABELED CROPS: Broccoli, Chinese Broccoli (gai lon), Broccoli raab (rapini), Brussels sprouts, Cabbage, Chinese cabbage (bok choy), Chinese cabbage (napa), Chinese mustard cabbage (gai choy), Cauliflower, Cavalo broccolo, Collards, Kale, Kohlrabi, Mizuna, Mustard greens, Mustard spinach, Rape greens.

Bulb Vegetables
LABELED CROPS: Garlic, Great-headed garlic, Leek, Onion (dry bulb and green), Welsh onion, Shallot.

Cucurbit Vegetables and fruits
LABELED CROPS: Chayote (fruit), Chinese waxgourd (Chinese preserving melon), Citron melon, Cucumber, Gherkin, Edible gourd (includes hyotan, cucuzza, hechima, Chinese okra), Melons (all), *Momordica spp* (includes balsam apple, balsam pear, bittermelon, Chinese cucumber), Muskmelon (includes cantaloupe, casaba, crenshaw melon, golden pershaw melon, honeydew melon, honey ball melon, mango melon, Persian melon, pineapple melon, Santa Claus melon, snake melon), Pumpkin, Summer squash (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini), Winter squash (includes butternut squash, calabaza, hubbard squash, acorn squash, spaghetti squash), Watermelon.

PRECAUTIONS, RESTRICTIONS: For Cantaloupe, Casaba melon, Crenshaw melon, Cucumber, Gherkin, Gourds, Honeydew melon, Honey ball melon, Mango melon, Melons (all), Muskmelon, Persian melon, Pumpkin, Squash (summer, winter), and Watermelon, allow at least 3 days between application and planting.

Leafy Vegetables
LABELED CROPS: Amaranth (Chinese spinach), Arugula (roquette), Beet greens, Cardoon, Celery, Chinese celery, Celtuce, Chaya, Chervil, Edible-leaved chrysanthemum, Garland chrysanthemum, Corn salad, Cress (garden and upland), Dandelion, Dock (sorrel), Dokudami, Endive (escarole), Florence fennel, Gow kee, Lettuce (head and leaf), Orach, Parsley, Purslane (garden and winter), Radicchio (red chicory), Rhubarb, Spinach, New Zealand spinach, Vine spinach, Swiss chard, Watercress (upland), Water spinach.

PRECAUTIONS, RESTRICTIONS: For Watercress, avoid applications within 3 days prior to seeding and during the period between seeding and emergence to minimize the risk of injury.

Fruiting Vegetables
LABELED CROPS: Eggplant, Groundcherry (*Physalis spp*), Pepino, Pepper (includes bell pepper, chili pepper, cooking pepper, pimento, sweet pepper), Tomatillo, Tomato.

PRECAUTIONS, RESTRICTIONS: For Eggplant, Ground cherry, Pepper (all), and Tomatillo, allow at least 3 days between application and planting. For Tomato, do not apply with hooded or shielded sprayer in row middles.

Legume Vegetables (succulent or dried)
LABELED CROPS: Bean (*Lupinus*: includes grain lupin, sweet lupin, white lupin and white sweet lupin), Bean (*Phaseolus*: includes field bean, kidney bean, lima bean, navy bean, pinto bean, runner bean, snap bean, tepary bean, wax bean), Bean (*Vigna*: includes adzuki bean, asparagus bean, blackeyed pea, catjang, Chinese longbean, cowpea, crowder pea, moth bean, mung bean, rice bean, southern pea, urd bean, yardlong bean), Broad bean (fava), Chickpea (garbanzo), Guar, Jackbean, Lablab bean, Lentil, Pea (*Pisum*: includes dwarf pea, edible-podded pea, English pea, field pea, garden pea, green pea, snowpea, sugar snap pea), Pigeon pea, Soybean (immature seed), Sword bean.

Root and Tuber Vegetables
LABELED CROPS: Arracacha, Arrowroot, Chinese artichoke, Jerusalem artichoke, Beet (garden), Burdock, Canna, Carrot, Cassava (bitter and sweet), Celeriac, Chayote (root), Chervil (turnip-rooted), Chicory, Chufa, Dasheen (taro), Galangal, Ginger, Ginseng, Horseradish, Leren, Kava (turnip-rooted), Parsley, Parsnip, Potato, Radish, Oriental radish, Rutabaga, Salsify, Black salsify, Spanish salsify, Skirret, Sweet potato, Tanier, Turmeric, Turnip, Wasabi, Yacon, Yam bean, True yam.

Directed applications (Non-Bearing Ginseng Only)
USE INSTRUCTIONS: This product may be used for general weed control in established non-bearing ginseng. Applications may be made with boom equipment, CDA, shielded sprayers, hand-held and high volume wands, lances, and orchard guns or with wiper application equipment.

PRECAUTIONS, RESTRICTIONS: Direct applications so that there is no contact of this product with the ginseng plant. Applications must be made at least one year prior to harvest.

Over-the-Top Wiper Applications (Rutabagas Only)
USE INSTRUCTIONS: Wiper applicators may be used over-the-top of rutabagas.

PRECAUTIONS, RESTRICTIONS: Allow at least 14 days between application and harvest of rutabagas.

Miscellaneous Crops
LABELED CROPS: Aloe vera, Asparagus, Bamboo shoots, Globe artichoke, Okra, Peanut (ground nut), Pineapple, Strawberry, Sugar beet.

TYPES OF APPLICATIONS: Those listed in the **ANNUAL AND PERENNIAL CROPS** section plus the following: General weed control, Site preparation, Spot Treatment (Asparagus).

PRECAUTIONS, RESTRICTIONS: Avoid contact of herbicide with foliage, green shoots or stems, bark, exposed roots (including those emerging from plastic mulch), or fruit of crops because severe injury or destruction may result. When making preemergence and at-planting applications, applications must be made before crop emergence to avoid severe crop injury. Apply before seed germination in coarse sandy soils to further minimize the risk of injury. In crops with vines, hooded sprayer, shielded sprayer and wiper applications to row middles should be made prior to vine development otherwise severe injury or destruction may result. Unless otherwise specified in this product's labeling, treatments with selective equipment including wipers and hooded sprayers must be made at least 14 days prior to harvest. Post-harvest or fallow applications must be made at least 30 days prior to planting any non-labeled crop. See **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for additional information.

General weed control, site preparation
USE INSTRUCTIONS: This product may be applied for general weed control or for site preparation prior to planting or transplanting crops listed in this section.

PRECAUTIONS, RESTRICTIONS: When applying this product prior to transplanting or direct-seeding crops into plastic mulch, care must be taken to remove residues of this product, which could cause crop injury, from the plastic prior to planting. Residues can be removed by a single 0.5-inch application of water, either by natural rainfall or via a sprinkler system. Care should be taken to insure that the wash water flushes off the plastic mulch and does not enter transplant holes. Applications made at emergence will result in injury or death to emerged seedlings.

Do not apply within a week before the first asparagus spears emerge. Do not feed or graze treated pineapple forage following application.

Spot Treatment (Asparagus)
USE INSTRUCTIONS: This product may be applied immediately after cutting, but prior to the emergence of new spears.

Post-Harvest (Asparagus)
USE INSTRUCTIONS: This product may be applied after the last harvest and all spears have been removed. If spears are allowed to regrow, delay application until ferns have developed. Delayed treatments should be applied as a directed or shielded spray in order to avoid contact of the spray with ferns, stems or spears.

PRECAUTIONS, RESTRICTIONS: Direct contact of the spray with the asparagus may result in serious crop injury. Select and use specified types of spray equipment for postemergence post-harvest applications. A directed spray is any application where the spray pattern is aligned in such a way as to avoid direct contact of the spray with the crop. A shielded spray is any application where a physical barrier is positioned and maintained between the spray and the crop to prevent contact of spray with the crop.

TREE, VINE AND SHRUB CROPS (Alphabetical)
NOTE: THIS SECTION GIVES GENERAL DIRECTIONS THAT APPLY TO ALL LISTED TREE, VINE AND SHRUB CROPS WITHIN THIS SECTION GROUPED ALPHABETICALLY BELOW. SEE THE INDIVIDUAL CROP CATEGORIES FOR SPECIFIC INSTRUCTIONS, PREHARVEST INTERVALS, PRECAUTIONS AND RESTRICTIONS.

TYPES OF APPLICATIONS: Preplant (Site Preparation) Broadcast Sprays, General Weed Control, Middles (between rows of trees, vines or bushes), Strips (within rows of trees, vines or bushes), Selective Equipment (shielded sprayers, wiper treatments), Directed Sprays, Spot Treatments, Perennial Grass Suppression, Cut Stump.

Applications may be made with boom equipment, CDA equipment, shielded sprayers, hand-held and high-volume wands, lances, orchard guns or with applicator equipment, except as directed.

GENERAL USE INSTRUCTIONS
This product may be applied in middles (between rows of trees or vines), strips (within rows of trees or vines) and for general weed control or perennial grass suppression in established tree fruit and nut groves, orchards, berries and vineyards. It may also be used for site preparation prior to planting or transplanting these crops. Apply 1 pint to 5 quarts per acre according to the **ANNUAL WEEDS** and **PERENNIAL WEEDS RATE TABLES** sections of this label. Utilize rates at the higher end of the application rate range when weeds are stressed, growing in dense populations or are greater than 12 inches tall. Repeat applications may be made up to a maximum of 10.6 quarts per acre per year.

The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredient, whether applied as mixtures or separately. Calculate the application rates and ensure that the total use of this and other glyphosate or sulfosate containing products does not exceed stated maximum use rate.

GENERAL PRECAUTIONS, RESTRICTIONS
Extreme care must be exercised to avoid contact of herbicide solution, spray, drift or mist with foliage or

green bark of trunk, branches, suckers, fruit or other parts of trees, canes and vines. Avoid applications when recent pruning wounds or other mechanical injury has occurred. Contact of this product with other than matured brown bark can result in serious crop damage or destruction. Only shielded or directed sprayers may be used in crops with potential for crop contact, and then only where there is sufficient clearance. For applications in strips (within rows of trees), only selective equipment (directed sprays, hooded sprayers, shielded applicators or wipers) should be used to minimize the potential for leakage or drift of herbicide sprays onto crop. For berry crops, hooded or shielded sprayers must be fully enclosed including top, sides, front and back. Only wipers or shielded applicators capable of preventing all contact with crop may be used. **See APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for additional directions and precautions.

Allow a minimum of 3 days between application and transplanting.

Middles (between rows of trees, vines or bushes)
USE INSTRUCTIONS: This product will control or suppress annual and perennial weeds and ground covers growing between the rows of labeled tree and vine crops. If weeds are under drought stress, irrigate prior to application. Reduced control may result if weeds have been mowed prior to application.

TANK MIXTURES: A tank mixture of this product plus Goal 2XL may be used for annual weeds in middles between rows of citrus crops, tree fruits, tree nuts and vine crops. Apply this mixture when weeds are stressed or growing in dense populations. 16 to 32 fluid ounces per acre of this product plus 3 to 12 fluid ounces per acre of Goal 2XL will control annual weeds with a maximum height or diameter of 6 inches, including crabgrass, common groundsel, junglerice, common lambsquarters, redroot pigweed, London rocket, common ryegrass, shepherd's purse, annual sowthistle, filaree (suppression), horseweed/marestail (*Conyza canadensis*), stinging nettle and common purslane (suppression). 16 to 32 fluid ounces per acre of this product plus 3 to 12 fluid ounces per acre of Goal 2XL will control common cheeseweed (malva) or hairy fleabane (*Conyza bonariensis*) with a maximum height or diameter of 3 inches.

Strips (in rows of trees, vines or bushes)
TANK MIXTURES: This product may be applied in rows of tree or vine crops in tank mixtures with the following products:

Devrinol™ 50 DF
Direx™ 4L
Goal 2XL
Karmex DF
Krovar I
Prowl
Princep Caliber™ 90
Simazine 4L
Simazine 80W
Sim-Trol™ 4L
Solicam™ DF
Surflan™ AS
Surflan 75W

Do not apply these tank mixtures in Puerto Rico.

Refer to the individual product labels for specific crops, rates, geographic restrictions and precautionary statements.

Perennial Grass Suppression
This product will suppress perennial grasses such as bahiagrass, Bermudagrass, tall fescue, orchardgrass, Kentucky bluegrass, and quackgrass that are grown as ground covers in tree and vine crops.

For suppression of tall fescue, fine fescue, orchardgrass and quackgrass, apply 8 fluid ounces of this product in 10 to 20 gallons of water per acre.

For suppression of Kentucky bluegrass covers, apply 6 fluid ounces of this product per acre. Do not add ammonium sulfate.

For best results, mow cool season grass covers in the spring to even their height and apply this product 3

to 4 days after mowing.

For suppression of vegetative growth and seedhead inhibition of bahiagrass for approximately 45 days, apply 6 fluid ounces of this product in 10 to 25 gallons of water per acre. Apply 1 to 2 weeks after full green-up or after mowing to a uniform height of 3 to 4 inches. This application must be made prior to seedhead emergence.

For suppression up to 120 days, apply 4 fluid ounces of this product per acre, followed by an application of 2 to 4 fluid ounces per acre about 45 days later. Make no more than 2 applications per year.

For burndown of Bermudagrass, apply 1 to 2 quarts of this product in 3 to 20 gallons of water per acre. Use this treatment only if reduction of the Bermudagrass stand can be tolerated. When burndown is required prior to harvest, allow at least 21 days to ensure sufficient time for burndown to occur.

For suppression of Bermudagrass, apply 6 to 16 fluid ounces of this product per acre east of the Rocky Mountains and 16 fluid ounces of this product per acre to the west of the Rocky Mountains. Apply in a total spray volume of 3 to 20 gallons per acre, no sooner than 1 to 2 weeks after full green-up. If the Bermudagrass is mowed prior to application, maintain a minimum of 3 inches in height. Sequential applications may be made when regrowth occurs and Bermudagrass injury and stand reduction can be tolerated. East of the Rocky Mountains, rates of 6 to 10 fluid ounces of this product per acre should be used in shaded conditions or where a lesser degree of suppression is desired.

Cut Stump (Tree crops)
USE INSTRUCTIONS: Cut stump applications of this product may be made during site preparation or site renovation, prior to transplanting tree crops. This product will control regrowth of cut stumps and resprouts of many types of tree species, some of which are listed below.

Citrus Trees: Calamondin, Chironja, Citron, Citrus hybrids, Grapefruit, Kumquat, Lemon, Lime, Mandarin (Tangerine), Orange (all), Pummelo, Tangelo, Tangor.

Fruit Trees: Apple, Apricot, Cherry (sweet, sour), Crabapple, Loquat, Mayhaw, Nectarine, Olive, Peach, Pear, Plum/Prune (all), Quince.

Nut Trees: Almond, Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert (hazelnut), Hickory Nut, Macadamia, Pecan, Pistachio, Walnut (black, English).

Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 50 to 100 percent solution of this product to the freshly cut surface immediately after cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

PRECAUTIONS, RESTRICTIONS: DO NOT MAKE CUT STUMP APPLICATIONS WHEN THE ROOTS OF ADJACENT DESIRABLE TREES MAY BE GRAFTED TO THE ROOTS OF THE CUT STUMP. INJURY RESULTING FROM ROOT GRAFTING MAY OCCUR IN ADJACENT TREES. Some sprouts, stems or trees may share the same root system. Adjacent trees having a similar age, height and spacing may signal shared roots. Whether grafted or shared, injury is likely to occur to non-treated stems/trees when one or more trees sharing common roots are treated.

Berry Crops
LABELED CROPS: Blackberry (including bingleberry, black satin berry, boysenberry, Cherokee blackberry, chesterberry, Cheyenne blackberry, coryberry, darrowberry, dewberry, Dirksen thornless berry, Himalayaberry, hullberry, juneberry, lavacaberry, lowberry, lucretiaberry, marionberry, nectarberry, olallieberry, Oregon evergreen berry, phenomenalberry, rangeberry, ravenberry, rossberry, Shawnee blackberry and youngberry), Blueberry, Cranberry, Currant, Elderberry, Gooseberry, Huckleberry, Loganberry, Raspberry (black, red), Salal.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section plus Spot Treatment in Cranberry Production and Post-Harvest Treatments in Cranberry Production.

PRECAUTIONS, RESTRICTIONS: To avoid damage, herbicide sprays must not be allowed to contact desirable vegetation, including green shoots, canes, or foliage. Allow a minimum of 30 days between last application and harvest in cranberries. Allow a minimum of 14 days between last application and harvest in other berry crops. Do not make directed sprays within the cranberry bush areas prior to berry harvest.

Spot Treatment in Cranberry Production
USE INSTRUCTIONS: Spot treatments may be used to control weeds growing in dry ditches (interior and perimeter) of cranberry production areas. Hand-held sprayers or other appropriate application equipment listed under **APPLICATION EQUIPMENT AND TECHNIQUES** in this label may be used. Drop water level to remove standing water in ditches prior to application. In hand-held sprayers, use 1 to 2 percent solution of this product. Spray to wet vegetation, not to run-off.

PRECAUTIONS, RESTRICTIONS: For treatments after draw down of water in dry ditches, allow 2 or more days after treatment before reintroduction of water to achieve maximum weed control. Apply this product within 1 day after draw down to ensure application to actively growing weeds. Allow a minimum of 30 days between last application and harvest of cranberries. Do not apply this material through the irrigation system. Do not make applications by air. Do not apply directly to water. Use nozzles that emit medium- to large-sized droplets to minimize drift in order to avoid crop injury.

Post-Harvest Treatments in Cranberry Production
USE INSTRUCTIONS: Application of this product may be made after the harvest of cranberries to control weeds growing within the field. Best results will be obtained if applications are made to vines that appear dormant (after they have turned red). Hand-held sprayers, wipers, or other appropriate application equipment listed under **APPLICATION EQUIPMENT AND TECHNIQUES** in this label may be used. If using hand-held sprayers, use a 0.5 to 1 percent solution of this product. Spray to wet vegetation, not to run-off. If using hand-held boom sprayers, apply 2 to 4 quarts of this product per acre.

PRECAUTIONS, RESTRICTIONS: Make applications only after cranberries have been harvested. Do not treat more than 10 percent of the total bog. Allow a minimum of 6 months after last application and next harvest of cranberries. Do not apply this product through the irrigation system. Do not make applications by air. Do not apply directly to water. Even though vines appear dormant, contact of the herbicide solution with desirable vegetation may result in damage or severe plant injury. Cranberry plants that are directly sprayed may be killed.

Citrus
LABELED CROPS: Calamondin, Chironja, Citron, Citrus Hybrids, Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Orange (all), Pummelo, Satsuma Mandarin, Tangelo (ugli), Tangor.

TYPES OF APPLICATIONS: Those listed in the **TREE, VINE AND SHRUB CROPS** section.

USE INSTRUCTIONS: (The recommendations below pertain to applications in Florida and Texas):
For burndown or control of the weeds listed below, apply the specified rates of this product in 3 to 30 gallons of water per acre. Where weed foliage is dense, use 10 to 30 gallons of water per acre.

For goatweed, apply 2 to 3 quarts of this product per acre. Apply in 20 to 30 gallons of water per acre when plants are actively growing. Use 2 quarts per acre when plants are less than 8 inches tall and 3 quarts per acre when plants are greater than 8 inches tall. If goatweed is greater than 8 inches tall, the addition of Krovar™ I or Karmex™ may improve control. Refer to the individual product labels for specific crops, rates, geographic restrictions and precautionary statements.

Perennial Weeds:

S=Suppression	B=Burndown			
PC=Partial control	C=Control			
WEED	**GLYFOS X-TRA RATE PER ACRE**			
SPECIES	**1 QT**	**2 QT**	**3 QT**	**5 QT**
Bermudagrass	B	--	PC	C
Guineagrass				
Texas and Florida Ridge	B	C	C	C
Florida Flatwoods	--	B	C	C
Paragrass	B	C	C	C
Torpedograss	S	--	PC	C

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 1 day between last application and harvest in citrus crops. For citron groves, apply as directed sprays only.

Miscellaneous Tree Food Crops
LABELED CROPS: Cactus (fruit and pads), Palm (heart, leaves), Palm (oil).

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

Non-Food Tree Crops
LABELED CROPS: Pine, Poplar, Eucalyptus, Christmas Trees, Other Non-Food Tree Crops.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

Directed Sprays, Spot Treatment, Wiper Applications
USE INSTRUCTIONS: This product may be used as a post-directed spray and spot treatment around established poplar, eucalyptus, Christmas trees and other non-food tree crops.

PRECAUTIONS, RESTRICTIONS: Care must be exercised to avoid contact of spray, drift or mist with foliage or green bark of established Christmas trees and other pine trees. Desirable plants may be protected from the spray solution by using shields or coverings made of cardboard or other impermeable material. DO NOT USE THIS PRODUCT AS AN OVER-THE-TOP BROADCAST SPRAY IN CHRISTMAS TREES AND OTHER PINE TREES.

Site Preparation
USE INSTRUCTIONS: This product may be used prior to planting non-food tree crops.

PRECAUTIONS, RESTRICTIONS: Precautions should be taken to protect non-target plants during site preparation applications.

Pome Fruit
LABELED CROPS: Apple, Crabapple, Loquat, Mayhaw, Pear (including oriental pear), Quince.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 1 day between last application and harvest in pome crops.

Stone Fruit
LABELED CROPS: Apricot, Cherry (sweet, tart), Nectarine, Olive, Peach, Plum/Prune (all types), Plumcot.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 17 days between last application and harvest in

stone fruit crops. For olive groves, apply as directed sprays only.

Restrictions on Application Equipment
For cherries, any application equipment listed in this section may be used in all states.

Any application equipment listed in this section may be used in apricots, nectarines, peaches and plums/prunes growing in Arizona, California, Colorado, Idaho, Kansas, Kentucky, New Jersey, North Dakota, Oklahoma, Oregon, Texas, Utah and Washington, except for peaches grown in the states specified in the following paragraph. In all other states, use wiper equipment only.

For PEACHES grown in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee only, apply with a shielded boom sprayer or shielded wiper applicator, which prevents any contact of this product with the foliage or bark of trees. Apply no later than 90 days after first bloom. Applications made after this time may result in severe damage. Remove suckers and low-hanging limbs at least 10 days prior to application. Avoid applications near trees with recent pruning wounds or other mechanical injury. Apply only near trees that have been planted in the orchard for 2 or more years. EXTREME CARE MUST BE TAKEN TO ENSURE NO PART OF THE PEACH TREE IS CONTACTED.

Tree Nuts
LABELED CROPS: Almond, Beechnut, Betelnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Coconut, Filbert (hazelnut), Hickory nut, Macadamia, Pecan, Pine nut, Pistachio, Walnut (black, English).

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 3 days between last application and harvest of tree nuts, except coconut. Allow 14 days between application and harvest in coconut.

Tropical and Subtropical Trees and Fruits
LABELED CROPS: Ambarella, Atemoya, Avocado, Banana, Barbados cherry (acerola), Biriba, Blimbe, Breadfruit, Cacao (cocoa) bean, Canistel, Carambola (starfruit), Cherimoya, Coffee, Custard apple, Dates, Durian, Feijoa, Figs, Governor's plum, Guava, Ilama, Imbe, Jaboticaba, Jackfruit, Longan, Lychee, Mamey apple, Mango, Mangosteen, Marmaladebox (genip), Mountain papaya, Papaya, Pawpaw, Plantain, Persimmon, Pomegranate, Pulasan, Rambutan, Rose apple, Sapodilla, Sapote (black, mamey, white), Spanish lime, Soursop, Star apple, Sugar apple, Surinam cherry, Tamarind, Tea, Ti (roots and leaves), Wax jambu.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section plus Bananacide (Banana Only).

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 1 day between last application and harvest in banana, guava, papaya and plantain crops. Allow a minimum of 14 days between last application and harvest for any other tropical or subtropical tree fruit. Allow a minimum of 28 days between last application and harvest in coffee crops. In coffee and banana, delay applications 3 months after transplanting to allow the new coffee or banana plant to become established.

Bananacide (Banana Only)
USE INSTRUCTIONS: This product may be used to destroy banana plants infected with the Banana Bunchy Top Virus as well as non-infected banana plants to establish disease free buffers around plantations. Remove all fruit from the plants within the treatment area prior to treatment. Inject 1/25 fluid ounce (1 mL) of this product's concentrate per 2 to 3 inches of pseudostem diameter. Make the injection at least one foot above the ground, except for very small plants, which should be injected vertically into the top. Any subsequent regrowth must also be destroyed. All plants and mats (or units) adjacent (within a 4-foot radius) to a treated mat shall be mechanically destroyed.

For control of the Banana Bunchy Top Virus, it is critical that the grower follow a strict control program involving monitoring for diseased plants, spraying to control the aphid vector and destruction of all infected mats (or units). An infected plant may not show symptoms of the banana bunchy top virus for up

to 125 days, therefore it is critical that the entire mat (or unit) containing the diseased plant be destroyed immediately.

PRECAUTIONS, RESTRICTIONS: Do not apply more than ½ fluid ounce (15 mL) of this product's concentrate per mat (or unit). Remove all fruit from plants and mats (or units) prior to treatment. Do not harvest any fruit or plant materials from treated mats (or units) following injection. Do not allow livestock to consume treated plant materials. Following transplant of new banana plants into treated areas, allow plants to become established for 3 months before applying this product for general weed control.

Vine Crops
LABELED CROPS: Grapes (raisin, table, wine), Hops, Kiwi, Passion fruit.

TYPES OF APPLICATIONS: Those listed in the **TREE, VINE AND SHRUB CROPS** section.

USE INSTRUCTIONS: Applications should not be made when green shoots, canes or foliage are in the spray zone.

In the Northeast and Great Lakes regions, applications must be made prior to the end of bloom stage of grapes to avoid injury, or make applications with shielded sprayers or wiper equipment.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 14 days between last application and harvest in vine crops. Do not use selective equipment in kiwi.

PASTURE GRASSES, FORAGE LEGUMES AND RANGELANDS

Alfalfa, Clover and Other Forage Legumes
LABELED CROPS: Alfalfa, Clover, Kenaf, Kudzu, Lespedeza, Leucaena, Lupin, Sainfoin, Trefoil, Velvet bean, Vetch (all types).

TYPES OF APPLICATIONS: Preplant, Preemergence, At-planting, Spot Treatment (Alfalfa and Clover only), Over-The-Top Wiper Applications (Alfalfa and Clover only), Renovation, Preharvest (Alfalfa only).

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied before, during or after planting crops listed in this section. Applications must be made prior to emergence of the crop.

PRECAUTIONS, RESTRICTIONS: If a single application is made at rates of 2 quarts per acre or less, no waiting period between treatment and feeding or grazing is required. If application rates greater than 2 quarts per acre are made, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Spot Treatment, Over-The-Top Wiper Applications (Alfalfa and Clover Only)
USE INSTRUCTIONS: This product may be applied as a spot treatment in alfalfa or clover. This product may be applied with wiper applicators to control or suppress the weeds listed under **WIPER APPLICATORS** in the **SELECTIVE EQUIPMENT** section of this label. Applications may be made in the same area at 30-day intervals.

PRECAUTIONS, RESTRICTIONS: For spot treatment and wiper applications, apply in areas where the movement of domestic livestock can be controlled. No more than 10 percent of the total field area should be treated at one time. Remove domestic livestock before application and wait 14 days after application before grazing livestock or harvesting.

Preharvest (Alfalfa Only)
USE INSTRUCTIONS: This product may be used in declining alfalfa stands or any stand of alfalfa where crop destruction is acceptable. This application will severely injure or destroy the stand of alfalfa. This product will control annual and perennial weeds, including quackgrass, when applied prior to the harvest of alfalfa. The treated crop and weeds can be harvested and fed to livestock after 36 hours. Allow a minimum of 36 hours between application and harvest. Applications may be made at any time of the year. Make only one application to an existing stand of alfalfa per year. For control of quackgrass, apply

in the spring, late summer or fall when quackgrass is actively growing. Treatments for quackgrass must be followed by deep tillage for complete control.

PRECAUTIONS, RESTRICTIONS: Do not apply more than 2 quarts of this product per acre as a preharvest treatment. Do not apply as a preharvest treatment for alfalfa grown for seed, as a reduction in germination or vigor may occur.

Renovation
USE INSTRUCTIONS: This product may be applied as a broadcast spray to renovate existing stands of alfalfa, clover and other labeled forage legumes. Labeled crops may be planted into the treated area.

PRECAUTIONS, RESTRICTIONS: Remove domestic livestock before application. If application rates of 2 quarts per acre or less are used wait 36 hours after application before grazing or harvesting. If application rates greater than 2 quarts per acre are used, wait 8 weeks between applications and grazing or harvesting.

Conservation Reserve Program (CRP)
TYPES OF APPLICATIONS: Renovation (rotating out of CRP), Site Preparation, Postemergence Weed Control in Dormant CRP Grasses, Over-The-Top Wiper Applications.

Renovation (rotating out of CRP), Site Preparation
USE INSTRUCTIONS: This product may be used to prepare CRP land for crop protection. Refer to Federal, state or local use guides for CRP renovation recommendations. For any crop not listed in the **CROPS** sections of this label, applications must be made at least 30 days prior to planting.

Postemergence Weed Control in Dormant CRP Grasses, Over-The-Top Wiper Applications
USE INSTRUCTIONS: This product may be used to suppress competitive growth and seed production of undesirable vegetation in CRP acres. Such applications may be made with wiper application equipment or as a broadcast or spot treatment to dormant CRP grasses. For selective applications with broadcast spray equipment, apply 12 to 16 fluid ounces of this product per acre in early spring before desirable CRP grasses, such as crested and tall wheatgrass, break dormancy and initiate green growth. Late fall applications can be made after desirable perennial grasses have reached dormancy.

PRECAUTIONS, RESTRICTIONS: Some stunting of CRP perennial grasses will occur if broadcast applications are made when plants are not dormant. Do not apply more than 3 quarts per acre per year onto CRP grasses.

Grass or Turfgrass Seed Production
LABELED CROPS: Any grass (*Gramineae* family) except corn, sorghum, sugarcane and those listed above under **CEREAL CROPS**.

TYPES OF APPLICATIONS: Preplant, Preemergence, Renovation, Site preparation, Shielded sprayers, Over-The-Top Wiper Applications, Spot Treatments, Creating Rows in Annual Ryegrass.

Preplant, Preemergence, Renovation, Site Preparation
USE INSTRUCTIONS: This product may be applied before, during or after planting or for renovation of turf or forage grass areas grown for seed production. Applications must be made prior to the emergence of the crop to avoid crop injury. For maximum control of existing vegetation, delay planting to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses, such as Bermudagrass, summer or fall applications provide best control.

PRECAUTIONS, RESTRICTIONS: Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after application to allow proper translocation into underground plant parts. If application rates total 3 quarts per acre or less, no waiting period between treatment and feeding or livestock grazing is required. If the rate is greater than 3 quarts per acre, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Shielded Sprayers
USE INSTRUCTIONS: Apply 1 to 3 quarts of this product as a broadcast spray in 10 to 20 gallons of water per acre to control weeds in the rows. Uniform planting in straight rows aids in shielded sprayer applications. Best results are obtained when the grass seed crop is small enough to easily pass by or through the protective shields.

PRECAUTIONS, RESTRICTIONS: Contact of this product in any manner to any vegetation to which treatment is not intended may cause damage. Such damage shall be the sole responsibility of the applicator.

Over-The-Top Wiper Applications
PRECAUTIONS, RESTRICTIONS: Contact of the herbicide solution with desirable vegetation may result in damage or destruction. Applicators should be adjusted so that the wiper contact point is at least 2 inches above the desirable vegetation. Weeds should be a minimum of 6 inches above the desirable vegetation. Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. This may occur in dense clumps, severe infestations, or when height of weeds varies so that not all weeds are contacted. In these instances, repeat treatments may be necessary. Better results may be obtained if 2 applications are made in opposite directions.

Spot Treatments
USE INSTRUCTIONS: Use a 1- to 1.5-percent solution.

PRECAUTIONS, RESTRICTIONS: Apply this product prior to heading of grasses. The crop receiving the spray in the treated area will be killed. Take care to avoid drift or spray outside the target area for the same reason.

Creating Rows in Annual Ryegrass
USE INSTRUCTIONS: Use 16 to 32 fluid ounces of this product per acre. Use the higher rate when the ryegrass is greater than 6 inches tall. Best results are obtained when applications are made before the ryegrass reaches 6 inches in height.

PRECAUTIONS, RESTRICTIONS: Set nozzle heights to allow the establishment of the desired row spacing while preventing spray droplets, spray fines, or drift to contact the ryegrass plants not treated. Use low-pressure nozzles, or drop nozzles designed to target the application over a narrow band.

Grower assumes all responsibility for crop losses from misapplication.

Pastures
LABELED CROPS: Any grass (*Gramineae* family) except corn, sorghum, sugarcane and those listed above under **CEREAL CROPS** including Bahiagrass, Bermudagrass, Bluegrass, Brome, Fescue, Guineagrass, Kikuyugrass, Orchardgrass, Pangola grass, Ryegrass, Timothy, Wheatgrass.

TYPES OF APPLICATIONS: Spot Treatment, Over-The-Top Wiper Applications, Preplant, Preemergence, Pasture Renovation, Postemergence Broadcast.

Spot Treatment, Over-The-Top Wiper Applications
USE INSTRUCTIONS: This product may be applied as a spot treatment or with wiper applicators in pastures. Applications may be made in the same area at 30-day intervals.

PRECAUTIONS, RESTRICTIONS: For spot treatments or wiper application methods using rates of 3 quarts per acre or less, the entire field or any portion of it may be treated. When spot treatments or wiper applications are made using rates above 3 quarts per acre, no more than 10 percent of the total pasture may be treated at any one time. To achieve maximum performance, remove domestic livestock before application and wait 7 days after application before grazing livestock or harvesting.

Preplant, Preemergence, Pasture Renovation
USE INSTRUCTIONS: This product may be applied prior to planting or emergence of forage grasses. In addition, this product may be used to control perennial pasture species listed on this label prior to re-planting.

PRECAUTIONS, RESTRICTIONS: If application rates total 3 quarts per acre or less, no waiting period between treatment and feeding or livestock grazing is required. If the rate is greater than 3 quarts per acre, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Rangelands
TYPES OF APPLICATIONS: Postemergence.

USE INSTRUCTIONS: This product will control or suppress many annual weeds growing in perennial cool and warm-season grass rangelands.

Preventing viable seed production is key to the successful control and invasion of annual grassy weeds in rangelands. Follow-up applications in sequential years should eliminate most of the viable seeds.

Grazing of treated areas should be delayed to encourage growth of desirable perennials. Allowing desirable perennials to flower and reseed in the treated area will encourage successful transition.

PRECAUTIONS, RESTRICTIONS: Do not use ammonium sulfate when spraying rangeland grasses with this product. Do not apply more than 3 quarts per acre per year.

Postemergence
Apply 12 to 16 fluid ounces of this product per acre to control or suppress many weeds, including downy brome, cheatgrass, cereal rye and jointed goatgrass in rangelands. Apply when most mature brome plants are in early flower and before the plants, including seedheads, turn color. Allowing for secondary weed flushes to occur in the spring following rain events further depletes the seed reserve and encourages perennial grass conversion on weedy sites. Fall applications are possible, where spring moisture is usually limited and fall germination allows for good weed growth.

For medusahead, apply 16 fluid ounces of this product per acre at the 3-leaf stage. Delaying applications beyond this stage will result in reduced or unacceptable control. Fire may be useful in eliminating the thatch layer produced by slow decaying culms prior to application. Allow new growth to occur before spraying after a burn. Repeat applications in subsequent years may be necessary to eliminate the seedbank before reestablishing desirable perennial grasses in medusahead-dominated rangelands.

Slight discoloration of the desirable grasses may occur, but they will regreen and regrow under moist soil conditions as effects of this product wear off.

Turf Grass Sod Production
TYPES OF APPLICATIONS: Preplant, Preemergence, Renovation, Site Preparation, Spot Treatments.

Preplant, Preemergence, Renovation, Site Preparation
USE INSTRUCTIONS: This product controls most existing vegetation prior to renovating turf grass areas or establishing turf grass grown for sod. Broadcast or hand-held equipment may be used to control sod remnants or other unwanted vegetation after sod is harvested. For maximum control of existing vegetation, delay planting or sodding to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses such as Bermudagrass, summer or fall applications provide the best control. Where existing vegetation is growing under mowed turfgrass management, apply this product after omitting at least one regular mowing to allow sufficient growth for good interception of the spray.

Desirable turf grasses may be planted following the above procedures.

PRECAUTIONS, RESTRICTIONS:

If application rates total 3 quarts per acre or less, no waiting period between treatment and livestock feeding or grazing is required. If the rate is greater than 3 quarts per acre, remove domestic livestock before application and wait 8 weeks after application before grazing treated turfgrass. Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after application to allow translocation into underground plant parts.

Spot Treatments
Hand-held equipment may be used for spot treatment of unwanted vegetation growing in existing turf grass.

GLYPHOSATE TOLERANT CROPS

The following instructions include all applications which can be made onto the specified glyphosate tolerant crops during the complete cropping season. DO NOT combine these instructions with other recommendations made for crop varieties that do not contain a glyphosate tolerant gene, in the **ANNUAL AND PERENNIAL CROPS (ALPHABETICAL)** section of this label.

CHEMINOVA RECOMMENDS USE OF THIS PRODUCT FOR POSTEMERGENCE APPLICATION ONLY ON CROP VARIETIES DESIGNATED AS CONTAINING A GLYPHOSATE TOLERANT GENE.

Applying this product to crop varieties that are not designated as glyphosate tolerant will result in severe crop injury and yield loss. Avoid contact with foliage, green stems, or fruit of crops, or any desirable plants that do not contain a glyphosate tolerant gene, since severe injury or destruction will result.

The glyphosate tolerant designation indicates that the crop variety contains a patented gene that provides tolerance to this product. Glyphosate tolerant crop varieties must be purchased from an authorized licensed seed supplier.

For ground applications with broadcast equipment, apply this product in 5 to 20 gallons of spray solution per acre. Carefully select proper nozzle and spray pressure to avoid spraying a fine mist. For best results with ground application equipment use flat spray nozzles. Check for even distribution of spray droplets.

For aerial applications, apply this product in 3 to 15 gallons of water per acre. See the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for procedures to avoid spray drift that may cause injury to any vegetation not intended for treatment. Use of appropriate buffer zones will help prevent injury to adjacent vegetation.

ATTENTION: AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS WHICH DO NOT CONTAIN A GLYPHOSATE TOLERANT GENE.

See the **MIXING** and **APPLICATION EQUIPMENT AND TECHNIQUES** sections of this label for additional directions and restrictions on the application of this product.

Tank mixtures with other herbicides, insecticides, fungicides, micronutrients or foliar fertilizers may result in reduced weed control or crop injury. Do not apply over-the-top applications of this product unless otherwise noted in this product label, supplemental labeling or fact sheets published separately by Cheminova.

Ammonium sulfate may be mixed with this product for applications to glyphosate tolerant crops. Refer to the **MIXING** section for use instructions for ammonium sulfate.

Sprayer Preparation: It is important that sprayer and mixing equipment be clean and free of pesticide residue before making applications of this product. Follow the cleaning procedures specified on the label of the product(s) previously used. THOROUGHLY CLEAN THE SPRAY TANK AND ALL LINES AND FILTERS TO ELIMINATE POTENTIAL CONTAMINATION FROM OTHER HERBICIDES PRIOR TO MIXING AND APPLYING THIS PRODUCT.

NOTE: The following recommendations are based on a clean start at planting by using a burndown application or tillage to control existing weeds before crop emergence. In no-till and stale seedbed systems, apply as a preplant burn-down treatment of this product to control existing weeds prior to crop emergence. Some weeds, such as black nightshade, broadleaf signalgrass, sicklepod, Texas panicum, sandbur, annual morningglory, woolly cupgrass, shattercane, wild proso millet, burcumber and giant ragweed with multiple germination times or suppressed (stunted) weeds may require a second application of this product for complete control. The second application should be made after some regrowth has occurred and at least 10 days after a previous application of this product.

GLYPHOSATE TOLERANT CANOLA
TYPES OF APPLICATIONS: Preplant, Preemergence, At-Planting, Postemergence (In-Crop).

DO NOT USE THIS PRODUCT ON CANOLA WITH A GLYPHOSATE TOLERANT GENE PLANTED IN THE FOLLOWING STATES: ALABAMA, DELAWARE, FLORIDA, GEORGIA, KENTUCKY, MARYLAND, NEW JERSEY, NORTH CAROLINA, SOUTH CAROLINA, TENNESSEE, VIRGINIA AND WEST VIRGINIA.

THE USE OF THIS PRODUCT FOR IN-CROP APPLICATIONS OVER GLYPHOSATE TOLERANT CANOLA MAY NOT BE PRACTICED IN CALIFORNIA UNLESS THE APPLICATOR HAS AT THE TIME OF APPLICATION A CALIFORNIA-APPROVED SUPPLEMENTAL LABEL SPECIFYING THE ACCEPTED DIRECTION FOR USE.

Maximum Allowable Combined Application Quantities Per Season
1. Preplant, Preemergence, At-Planting applications 2 quarts/acre
2. Total in-crop application from emergence to 6 leaf stage 2 quarts/acre

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied before, during or after planting canola.

Postemergence (In-Crop)
USE INSTRUCTIONS: This product may be applied postemergence to glyphosate tolerant canola from emergence through the 6-leaf stage of development. Applications made during bolting or flowering may result in crop injury and yield loss. To maximize yield potential, make applications early to eliminate competing weeds.

Weeds Controlled: For specific rates of application and instructions, refer to the **ANNUAL WEEDS** and **PERENNIAL WEEDS RATE TABLES** in this booklet.

> **Single Application**—Apply 16 to 32 fluid ounces per acre no later than the 6-leaf stage for the control of annual weeds. Avoid overlapping applications which may result in temporary yellowing, delayed flowering, and/or growth reduction. Similar injury may result when applications of more than 16 fluid ounces per acre are applied after the 4-leaf stage.
>
> **Sequential Application**—Apply 32 ounces per acre to 1- to 3-leaf canola followed by a sequential application at a minimum interval of 10 days, but no later than the 6-leaf stage. Apply sequential applications for early emerging annual weeds and perennial weeds such as Canada thistle and quackgrass or when controlling weeds with multiple application times.

PRECAUTIONS, RESTRICTIONS: See the **GLYPHOSATE TOLERANT CROPS** section of this label for general precautionary instructions for use in glyphosate tolerant crops. No more than two over-the-top broadcast applications may be made from crop emergence through the 6-leaf stage of development and the total in-crop application should not exceed 64 fluid ounces per acre. Allow a minimum of 60 days between last application and canola harvest.

GLYPHOSATE TOLERANT CORN
TYPES OF APPLICATIONS: Preplant, Preemergence, At-Planting, Postemergence (In-Crop), Spot Treatment, Preharvest, Post-Harvest.

Maximum Allowable Combined Application Quantities Per Season	
Combined total per year for all applications	8 quarts per acre
Preplant, Preemergence, At-Planting applications	5 quarts per acre
Total in-crop applications from emergence through the V8 Stage or 30 inches	2 quarts per acre
Maximum preharvest application rate after maximum kernel fill is complete and the crop is physiologically mature (black layer formation) until 7 days before harvest	1 quart per acre

USE INSTRUCTIONS: This product may be applied alone or in a tank-mixture before, during or after planting corn.

TANK MIXTURES: This product may be tank mixed with Bullet, Degree, Degree Xtra, Harness, Harness Xtra, Harness Xtra 5.6L, Lariat, Lasso or Micro-Tech at 50 to 100 percent of labeled rate. Refer to the specific product label and observe all precautions and limitations on the label for any preemergence herbicide application, including application timing restrictions, soil restrictions, minimum recropping interval and rotational guidelines – the more restrictive requirements apply.

NOTE: For maximum weed control, a postemergence (in-crop) application of this product should be applied following the use of less than labeled rates of the preemergence residual products listed above.

Postemergence (in-crop)
USE INSTRUCTIONS: This product may be applied postemergence to glyphosate tolerant corn from emergence through the V8 stage (8 leaves with collars) or until corn height reaches 30 inches, whichever comes first.

When applied as directed, this product controls labeled annual grass and broadleaf weeds in glyphosate tolerant corn. Many perennial grass and broadleaf weeds will be controlled or suppressed with one or more application of this product. The postemergence application of 24 to 32 fluid ounces per acre of this product should be made before the weeds reach a height and/or density that the weeds become competitive with the crop, generally 4 inch tall weeds or less. This product may be applied alone as a postemergence in-crop application to provide control of emerged weeds listed on this label. If new flushes of weeds occur, a sequential application of this product at 24 to 32 fluid ounces per acre will control the labeled grasses and broadleaf weeds.

TANK MIXTURES: This product may be applied in tank mixture with a Bullet, Degree, Degree Xtra, Harness, Harness Xtra, Harness Xtra 5.6L and Micro-Tech at 50 to 100 percent of labeled rate. This product may be applied in tank mixture with Permit and Atrazine at labeled rates. Refer to the specific product label and observe all precautions and limitations on the label for all products used in tank mixtures, including application timing restrictions, soil restrictions, minimum re-cropping interval and rotational guidelines - the more restrictive requirements apply. The individual tank mix product must be registered for use on this site.

Tank Mix Partner	Max. Height of Corn for Application
Degree	11 inches
Degree Xtra	
Harness	

Harness Xtra	
Harness Xtra 5.6L	
Bullet*	5 inches
Micro-Tech*	
Permit	30 inches
Atrazine	12 inches

*Bullet and Micro-Tech are not registered for use as a postemergence application in Texas.

PRECAUTIONS, RESTRICTIONS: See the **GLYPHOSATE TOLERANT CROPS** section of this label for general precautionary instructions for use in glyphosate tolerant crops. Single in-crop applications of this product are not to exceed 1 quart per acre. Sequential in-crop applications of this product from emergence through the V8 stage or 30 inches must not exceed 2 quarts per acre per growing season. Allow a minimum of 10 days between in-crop applications of this product. Allow a minimum of 50 days between application of this product and harvest of corn forage.

Preharvest
USE INSTRUCTIONS: In glyphosate tolerant corn, up to 1 quart per acre of this product can be applied preharvest. Make applications at 35 percent grain moisture or less. Ensure that maximum kernel fill is complete and the corn is physiologically mature (black layer formed).

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between application and harvest.

Post-Harvest
USE INSTRUCTIONS: This product may be applied after harvest of corn. Higher rates may be required for control of large weeds that were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between treatment and harvest or feeding of treated vegetation.

GLYPHOSATE TOLERANT COTTON, SUCH AS ROUNDUP READY® OR GLYTOL®
TYPES OF APPLICATIONS: Preplant, Preemergence, At-Planting, Postemergence (Over-the-Top), Selective Equipment, Preharvest.

Maximum Allowable Combined Application Quantities Per Season	
Combined total per year for all applications	8 quarts per acre
Preplant, Preemergence, At-Planting applications	5 quarts per acre
Total in-crop applications from ground cracking to layby	4 quarts per acre
Maximum preharvest application rate	2 quarts per acre

PRECAUTIONS, RESTRICTIONS: See the **GLYPHOSATE TOLERANT CROPS** section of this label for general precautionary instructions for use in glyphosate tolerant crops. The combined total application of this product from cotton emergence until harvest must not exceed 6 quarts per acre. NO MORE THAN TWO OVER-THE-TOP BROADCAST APPLICATIONS MAY BE MADE FROM CROP EMERGENCE THROUGH THE FOUR-LEAF (NODE) STAGE OF DEVELOPMENT. NO MORE THAN TWO APPLICATIONS SHOULD BE MADE FROM THE 5-LEAF STAGE THROUGH LAYBY. SEQUENTIAL

IN-CROP OVER-THE-TOP OR POST-DIRECTED APPLICATIONS OF THIS PRODUCT MUST BE AT LEAST 10 DAYS APART AND COTTON MUST HAVE AT LEAST TWO NODES OF INCREMENTAL GROWTH BETWEEN APPLICATIONS. ALLOW A MINIMUM OF 7 DAYS BETWEEN APPLICATION AND HARVEST.

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied before, during or after planting cotton.

Postemergence (Over-the-Top)
USE INSTRUCTIONS: This product may be applied by aerial or ground application equipment at rates up to 1 quart per acre per application postemergence to glyphosate tolerant cotton from the ground cracking stage until the four leaf (node) stage of development (until the fifth true leaf reaches the size of a quarter). Over-the-top applications made after the four leaf (node) stage of development may result in boll loss, delayed maturity and/or yield loss.

Salvage treatment: This treatment may be used after the four leaf stage of development and should only be used where weeds threaten to cause the loss of the crop. One quart per acre may be applied either as an over-the-top application or as a post-directed treatment sprayed higher on the cotton plants and over the weeds. **NOTE:** SALVAGE TREATMENTS WILL RESULT IN SIGNIFICANT BOLL LOSS, DELAYED MATURITY AND/OR YIELD LOSS. NO MORE THAN ONE SALVAGE TREATMENT SHOULD BE USED PER GROWING SEASON.

NOTE: For specific rates of application and instructions, refer to the **ANNUAL WEEDS** and **PERENNIAL WEEDS RATE TABLES** in this booklet.

PRECAUTIONS, RESTRICTIONS: See the **GLYPHOSATE TOLERANT CROPS** section of this label for general precautionary instructions for use in glyphosate tolerant crops.

Selective equipment
USE INSTRUCTIONS: This product may be applied using precision post-directed or hooded sprayers at rates up to 1 quart per acre per application to glyphosate tolerant cotton through layby. At this stage, post-directed equipment should be used which directs the spray to the base of the cotton plants. Contact of the spray with cotton leaves should be avoided to the maximum extent possible. To minimize spray onto the leaves of the cotton plants, place nozzles in a low position directing a horizontal spray pattern under the cotton leaves to contact weeds in the row, and maintain low spray pressure (less than 30 psi). For best results, make applications while weeds are small (less than 3 inches).

PRECAUTIONS, RESTRICTIONS: See the **SELECTIVE EQUIPMENT** part of the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for information on proper use and calibration of this equipment.

Preharvest
USE INSTRUCTIONS: This product may be applied for preharvest annual and perennial weed control as a broadcast treatment to glyphosate tolerant cotton after 20 percent boll crack. Up to 2 quarts of this product may be applied using either aerial or ground spray equipment.

TANK MIXTURES: This product may be tank mixed with DEF™ 6, Folex™, Ginstar or Prep™. **NOTE:** This product will not enhance the performance of these harvest aids when applied to glyphosate tolerant cotton.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between application and harvest of cotton. Do not apply this product to cotton grown for seed, as a reduction in germination or vigor may occur. THE USE OF ADDITIVES, OTHER THAN THOSE LISTED ON THIS LABEL, FOR PREHARVEST APPLICATION TO COTTON IS PROHIBITED.

ATTENTION: USE OF THIS PRODUCT IN ACCORDANCE WITH LABEL DIRECTIONS IS EXPECTED TO RESULT IN NORMAL GROWTH OF GLYPHOSATE TOLERANT COTTON, HOWEVER, VARIOUS ENVIRONMENTAL CONDITIONS, AGRONOMIC PRACTICES AND OTHER FACTORS MAKE IT

IMPOSSIBLE TO ELIMINATE ALL RISKS ASSOCIATED WITH THIS PRODUCT, EVEN WHEN APPLICATIONS ARE MADE IN CONFORMANCE WITH THE LABEL SPECIFICATIONS. IN SOME CASES, THESE FACTORS CAN RESULT IN BOLL LOSS, DELAYED MATURITY AND/OR YIELD LOSS.

GLYPHOSATE TOLERANT SOYBEANS

TYPES OF APPLICATIONS: Preplant, Preemergence, At-Planting, Postemergence (In-Crop), Preharvest, Post-Harvest.

THE USE OF THIS PRODUCT FOR IN-CROP APPLICATIONS OVER GLYPHOSATE TOLERANT SOYBEANS MAY NOT BE PRACTICED IN CALIFORNIA UNLESS THE APPLICATOR HAS AT THE TIME OF APPLICATION A CALIFORNIA-APPROVED SUPPLEMENTAL LABEL SPECIFYING THE ACCEPTED DIRECTION FOR USE.

Maximum Allowable Combined Application Quantities Per Season	
Combined total per year for all applications	8 quarts per acre
Preplant, Preemergence, At-Planting applications	5 quarts per acre
Total in-crop applications from cracking throughout flowering	3 quarts per acre
Maximum preharvest application rate	1 quarts per acre

PRECAUTIONS, RESTRICTIONS: See the **GLYPHOSATE TOLERANT CROPS** section of this label for general precautionary instructions for use in glyphosate tolerant crops.

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied before, during or after planting soybeans.

Postemergence (In-Crop)
USE INSTRUCTIONS: When applied as directed, this product will control labeled annual grass and broadleaf weeds in glyphosate tolerant soybeans. Applications of this product can be made in glyphosate tolerant soybeans from emergence (cracking) throughout flowering. Refer to the **ANNUAL WEEDS RATE TABLE** in this label for application rates for specific annual weeds. In general, apply 1 quart per acre on 2- to 8-inch tall weeds. Weeds will generally be 2 to 8 inches tall, 2 to 5 weeks after planting. If the initial application is delayed and weeds are larger, apply a higher rate of this product. This product may be used up to 2 quarts per acre in any single in-crop application for control of annual weeds and where heavy weed densities exist.

A 1- to 2-quarts per acre rate (single or multiple applications) of this product will control or suppress perennial weeds such as: Bermudagrass, Canada thistle, common milkweed, field bindweed, hemp dogbane, horsenettle, marestail (horseweed), nutsedge, quackgrass, rhizome johnsongrass, redvine, trumpetcreeper, swamp smartweed and wirestem muhly. For best results, allow perennial weed species to achieve at least 6 inches of growth before spraying with this product.

Under adverse growing conditions such as drought, hail, wind damage, or a poor soybean stand that slows or delays canopy closure, a sequential application may be necessary to control late flushes of weeds. IN THE SOUTHERN STATES, A SEQUENTIAL APPLICATION OF THIS PRODUCT WILL BE REQUIRED TO CONTROL NEW FLUSHES OF WEEDS IN THE GLYPHOSATE TOLERANT SOYBEAN CROP. To control giant ragweed, apply 1 quart per acre of this product when the weed is 8 to 12 inches tall to increase control and possibly avoid the need for a sequential application.
NOTE: The use of this product for in-crop applications over glyphosate tolerant soybeans is not registered in California.

PRECAUTIONS, RESTRICTIONS: The combined total application from crop emergence through harvest must not exceed 3 quarts per acre. The maximum rate for any single in-crop application is 2 quarts per acre. The maximum combined total of this product that can be applied during flowering is 2 quarts per acre.

Preharvest
USE INSTRUCTIONS: This product provides weed control when applied prior to harvest of soybeans. Up to 1 quart per acre of this product can be applied by aerial or ground application.

PRECAUTIONS, RESTRICTIONS: Care should be taken to avoid excessive seed shatter loss due to ground application equipment. Allow a minimum of 14 days between final application and harvest of soybean grain or feeding of soybean grain, forage or hay.

Post-Harvest
USE INSTRUCTIONS: This product may be applied after harvest of glyphosate tolerant soybeans. Higher rates may be required for control of large weeds that were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

NON-CROP USES AROUND THE FARMSTEAD
TYPES OF APPLICATIONS: General non-selective weed control, trim-and-edge, greenhouse/shadehouse, chemical mowing, cut stumps, habitat management.

General Weed Control and Trim-And-Edge
USE INSTRUCTIONS: This product may be used to control annual weeds, perennial weeds and woody brush which are found in any part of the farmstead, including building foundations, along and in fences, in dry ditches and canals, along ditchbanks, farm roads, shelterbelts, prior to landscape plantings and equipment storage areas.

TANK MIXTURES: This product may be tank mixed with the following products. Refer to these product labels for approved farmstead sites and application rates. For annual weeds, use 1 quart per acre of this product when weeds are less than 6 inches tall, 1.5 quarts per acre when weeds are 6 to 12 inches tall and 2 quarts per acre when weeds are greater than 12 inches tall. For perennial weeds, apply 2 to 5 quarts per acre in these tank mixes. For tank mixtures with these products through backpack sprayers, handguns or other high-volume spray-to-wet applications, see the ANNUAL WEEDS—HAND HELD OR HIGH VOLUME EQUIPMENT section of this label for specified rates. The individual tank mix product must be registered for use on this site.

Arsenal
Banvel/Clarity
Barricade 65 WG
Diuron
Endurance
Escort
Karmex DF
Krovar I DF
Oust
Pendulum 3.3 EC
Pendulum WDG
Plateau
Princep DF
Princep Liquid
Ronstar 50 WP
Sahara
Simazine
Surflan
Telar
Vanquish
2,4-D

This product plus dicamba tank mixtures may not be applied by air in California.

Greenhouse / Shadehouse
This product may be used to control weeds in and around greenhouses and shadehouses. Desirable vegetation must not be present during application and air circulation fans must be turned off.

Chemical Mowing
USE INSTRUCTIONS: This product will suppress perennial grasses listed in this section to serve as a substitute for mowing. Use 6 fluid ounces of this product per acre when treating Kentucky bluegrass. Use 8 fluid ounces of this product per acre when treating tall fescue, fine fescue, orchardgrass, bahiagrass or quackgrass covers. Use 16 fluid ounces of this product per acre when treating Bermudagrass. Use 64 fluid ounces of this product per acre when treating torpedograss or paragrass. Apply treatments in 10 to 20 gallons of spray solution per acre. Chemical mowing applications may be made along farm ditches and other parts of farmsteads.

PRECAUTIONS, RESTRICTIONS: Use only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

Cut Stump Treatments
TYPES OF APPLICATIONS: Treating cut stumps in any non-crop site listed on this label.

USE INSTRUCTIONS: This product will control regrowth of cut stumps and resprouts of many types of woody brush and tree species, some of which are listed below. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 50 to 100 percent solution of this product to the freshly-cut surface immediately after cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

Alder
Eucalyptus
Madrone
Oak
Pepper, brazilian
Pine, Austrian
Reed, giant
Saltcedar
Sweetgum
Tan oak
Willow

PRECAUTIONS, RESTRICTIONS: Do not make cut stump applications when the roots of desirable woody brush or trees may be grafted to the roots of the cut stump. Some sprouts, stems, or trees may share the same root system. Adjacent trees having a similar age, height and spacing may signal shared roots. Whether grafted or shared, injury is likely to occur to non-treated stems/trees when one or more trees sharing common roots are treated.

Habitat Management
TYPES OF USES: Habitat restoration and maintenance, Wildlife food plots.

Habitat Restoration and Maintenance
USE INSTRUCTIONS: This product may be used to control exotic and other undesirable vegetation in habitat management areas. Applications can be made to allow recovery of native plant species, prior to planting desirable native species, and for similar broadspectrum vegetation control requirements in habitat management areas. Spot treatments can be made to selectively remove unwanted plants for habitat maintenance and enhancement.

Wildlife Food Plots
USE INSTRUCTIONS: This product may be used as a site preparation treatment to control annual and perennial weeds prior to planting wildlife food plots. Any wildlife food species may be planted after applying this product, or native species may be allowed to repopulate the area. If tillage is needed to prepare a seedbed, wait 7 days after applying this product before tilling.

ANNUAL WEEDS RATE TABLE
(Alphabetically by Species)

APPLY WATER CARRIER VOLUMES OF 3 TO 10 GALLONS PER ACRE FOR GROUND APPLICATIONS AND 3 TO 5 GALLONS PER ACRE FOR AERIAL APPLICATIONS.

Apply to actively growing annual weeds. Annual weeds are generally easier to control when they are small.
Older, mature (hardened) annual weed species may require higher rates even if they meet the size requirements.
Do not tank mix with soil residual herbicides when using these rates unless otherwise specified.
For weeds that have been mowed, grazed or cut, allow regrowth to occur prior to treatment.
This product may be used up to 48 fluid ounces per acre where heavy weed densities exist.

ANNUAL WEEDS RATE TABLE

WEED SPECIES	RATE (fluid ounces per acre) 16	24	32	40	48
	Maximum height/length (in inches)				
Ammannia, purple	3	6	12	-	18
Annoda, spurred	-	2	3	5	8
Barley	18	18+	-	-	-
Barnyardgrass	-	3	6	7	9
Bassia, fivehook	-	-	6	-	-
Beggarweed, Florida	-	5	8	-	-
Bittercress	12	20	-	-	-
Bluegrass, annual	10	-	-	-	-
Bluegrass, bulbous	6	-	-	-	-
Brome, downy[1,2]	6	12	-	-	-
Brome, Japanese	6	12	24	-	-
Browntop panicum	6	8	12	-	24
Buckwheat, wild[3]	-	1	2	-	-
Burcucumber	-	6	12	-	18
Buttercup	12	20	-	-	-
Carolina geranium	-	-	4	-	9
Carpetweed	-	6	12	-	-
Cheat[2]	6	20	-	-	-
Chervil	20	-	-	-	-
Chickweed	-	12	18	-	-
Cocklebur	12	18	24	-	36

Copperleaf, hophornbeam	-	2	4	-	6
Copperleaf, Virginia	-	2	4	-	6
Coreopsis, plains	-	6	12	-	18
Corn, volunteer	6	12	20	-	-
Corn speedwell	12	-	-	-	-
Crabgrass	3	6	12	-	-
Crowfootgrass	-	-	6	-	12
Cutleaf evening primrose	-	-	3	-	6
Devilsclaw (unicorn plant)	-	3	6	-	-
Dwarfdandelion	12	-	-	-	-
Eastern mannagrass	8	12	-	-	-
Eclipta	-	4	8	12	-
Fall panicum	4	-	6	-	12
Falsedandelion	-	20	-	-	-
Falseflax, smallseed	12	-	-	-	-
Fiddleneck	-	6	12	-	-
Field pennycress	6	12	-	-	-
Filaree	-	-	6	-	12
Fleabane, annual	6	20	-	-	-
Fleabane, hairy *(Conyza bonariensis)*	-	-	6	-	10
Fleabane, rough	3	6	12	-	-
Florida pusley	-	-	4	-	6
Foxtail, giant, bristly, yellow	6	12	20	-	-
Foxtail, Carolina	10	-	-	-	-
Foxtail, green	12	-	-	-	-
Goatgrass, jointed	6	12	-	-	-
Goosegrass	-	3	6	-	12
Grain sorghum (milo)	6	12	20	-	-
Groundcherry	-	3	6	-	9

Groundsel, common	-	6	10	-	-
Hemp sesbania	-	2	4	6	8
Henbit	-	-	6	-	12
Horseweed/Marestail* *(Conyza canadensis)*	-	6	12	-	18
Itchgrass	6	8	12	-	18
Jimsonweed	-	-	12	-	18
Johnsongrass, seedling	6	12	18	-	24
Junglerice	-	3	6	7	9
Knotweed	-	-	6	-	12
Kochia[4]	-	3 to 6	12	-	-
Lambsquarters	-	6	12	-	20
Little barley	6	12	-	-	-
London rocket	6	-	24	-	-
Mayweed	-	2	6	12	18
Morningglory, annual *(Ipomoea spp)*	-	-	3	-	6
Mustard, blue	6	12	18	-	-
Mustard, tansy	6	12	18	-	-
Mustard, tumble	6	12	18	-	-
Mustard, wild	6	12	18	-	-
Nightshade, black	-	4	6	-	12
Nightshade, hairy	-	4	6	-	12
Oats	3	6	18	-	-
Pigweed species	-	12	18	24	-
Prickly lettuce	-	6	12	-	-
Purslane	-	-	3	-	6
Ragweed, common	-	6	12	-	18
Ragweed, giant	-	6	12	-	18
Red rice	-	-	4	-	-

Rye, volunteer/cereal[2]	6	18	18+	-	-
Ryegrass	-	-	6	-	12
Sandbur, field	6	12	-	-	-
Sandbur, longspine	6	12	-	-	-
Shattercane	6	12	20	-	-
Shepherd's purse	6	12	-	-	-
Sicklepod	-	2	4	-	8
Signalgrass, broadleaf	-	3	6	7	9
Smartweed, ladysthumb -	-	6	-	9	
Smartweed, Pennsylvania	-	-	6	-	9
Sowthistle, annual	-	-	6	-	12
Spanishneedles	-	-	6	-	12
Speedwell, purslane	12	-	-	-	-
Sprangletop	6	12	20	-	-
Spurge, prostrate	-	6	12	-	-
Spurge, spotted	-	6	12	-	-
Spurry, umbrella	6	-	-	-	-
Stinkgrass	-	12	-	-	-
Sunflower	12	18	-	-	-
Swinecress	-	5	12	-	-
Teaweed/Prickly sida	-	2	4	-	6
Texas panicum	6	8	12	-	24
Thistle, Russian[5]	-	6	12	-	-
Velvetleaf	-	-	6	-	12
Virginia pepperweed	-	18	-	-	-
Waterhemp	-	-	6	-	12
Wheat[2]	6	12	18	-	-
Wheat (overwintered)	-	6	12	-	18
Wild oats	3	6	18	-	-

Wild proso millet	-	6	12	-	18
Witchgrass	-	12	-	-	-
Woolly cupgrass	-	6	12	-	-
Yellow rocket	-	12	20	-	-

[1] For control of downy brome in no-till systems, use 24 fluid ounces per acre.
[2] Performance is better if application is made before this weed reaches the boot stage of growth.
[3] Use 24 fluid ounces per acre of this product to control wild buckwheat in the cotyledon to 2-leaf stage. Use 32 fluid ounces per acre to control 2- to 4-leaf wild buckwheat. For improved control of wild buckwheat over 2 inches in size, use sequential treatments of 32 fluid ounces followed by 32 fluid ounces of this product per acre.
[4] Do not treat kochia in the button stage.
[5] Control of Russian thistle may vary based on environmental conditions and spray coverage. Whenever possible, a tank mixture with 2,4-D as described below may improve control. The individual tank mix product must be registered for use on this site.

***For Control and Management of Glyphosate Resistant Horseweed (Marestail, *Conyza Canadensis*) In Cotton, Corn and Soybeans (NOT REGISTERED FOR USE IN CALIFORNIA)**

COTTON
Preplant
For control of horseweed, apply this product (32 fluid ounces per acre) in a tank-mix with Clarity®(8 fluid ounces per acre). This application must be made 21 to 35 days before planting and before horseweed reaches 6 inches in height. In order to avoid crop injury, a minimum interval of 21 days during which there is at least 1 inch of cumulative rainfall must be observed between Clarity application and planting of cotton.

Post-directed (Glyphosate Tolerant Cotton Varieties Only)
Management of early season weed competition and the development of a crop height differential between cotton and the horseweed is often achieved by a combination of preplant burndown and postemergence over-the-top and/or directed applications of Glyfos X-TRA Herbicide. These measures enhance the development of a height differential that is necessary to successfully make post-directed treatments. In-crop post-directed applications of MSMA (2 pounds active ingredient per acre) tank-mixed with diuron (0.5 to 0.75 pounds active ingredient per acre) should be made when the temperature is 80°F or higher.

SOYBEANS
Preplant
Apply a tank mixture of this product (32 fluid ounces per acre) with 2,4-D (0.5 pounds a.i. per acre) before horseweed exceeds 6 inches in height. See the 2,4-D product label for time intervals that are required between application and planting. For areas where 2,4-D cannot be applied due to application restrictions or proximity to a sensitive crop, contact your local retailer. The individual tank mix product must be registered for use on this site.

In-crop (Glyphosate Tolerant Soybean Varieties Only)
Control horseweed prior to planting, using specified preplant burndown treatments. In-crop glyphosate tolerant soybeans, apply a tank mixture of this product (32 fluid ounces per acre) with Amplify™ or FirstRate™ (0.3 ounces per acre). This treatment should be used as a salvage treatment only for a horseweed infestation that was not controlled preplant. Application should be made between full emergence of the first trifoliate leaf and 50% flowering stage of soybeans. At the time of treatment, horseweed should not exceed 6 inches in height.

CORN
Preplant, At-Planting, Preemergence
Apply a tank mixture of this product (32 fluid ounces per acre) plus 2,4-D (0.5 pounds a.i. of per acre)

before horseweed exceeds 6 inches in height. See the 2,4-D product label for time intervals that are required between application and planting.
Atrazine (1 to 2 pounds active ingredient per acre) may be included in the tank-mixture to provide residual control. Refer to the atrazine product label for specific use instructions.

The individual tank mix product must be registered for use on this site.

In-crop (**Glyphosate Tolerant Corn Hybrids Only**)
In-crop glyphosate tolerant corn, apply a tank-mixture of this product (32 fluid ounces per acre) plus Clarity (8 to 16 fluid ounces per acre) or 2,4-D (0.5 to 1.0 pounds a.i. per acre). Apply between corn emergence and the 5-leaf stage of growth (approximately 8 inches tall).

Annual Weeds – Rates for 10 to 40 Gallons per Acre
Apply 1 to 2 quarts of this product per acre. Use 1 quart per acre if weeds are less than 6 inches tall, 1.5 quarts per acre if weeds are 6 to 12 inches tall and 2 quarts per acre if weeds are greater than 12 inches tall. These rates will provide control of weeds listed in the annual weed control tables when water carrier volumes are 10 to 40 gallons per acre for ground applications. Older, mature (hardened) annual weed species may require higher rates even if they meet the size requirements.

Annual Weeds – Tank Mixtures with 2,4-D, Dicamba or Tordon 22K
12 to 16 fluid ounces of this product plus ¼ pound of dicamba or ½ pound of 2,4-D or 1 to 2 fluid ounces of Tordon 22K per acre will control the following weeds with the maximum height or length indicated: 6" – prickly lettuce, marestail/horseweed, morning glory, kochia (dicamba only), wild buckwheat (Tordon 22K only); 12" – cocklebur, lamb's quarters, pigweed, Russian thistle (2,4-D only).

16 fluid ounces of this product plus ½ pound of 2,4-D per acre will control the following weeds when they are a maximum height or length of 6 inches: common ragweed, giant ragweed, Pennsylvania smartweed and velvetleaf.

Refer to the specific product labels for crop rotation restrictions and cautionary statements of all products used in tank mixtures. Some crop injury may occur if dicamba or Tordon 22K is applied within 45 days of planting. The individual tank mix product must be registered for use on this site.

DO NOT APPLY DICAMBA TANK MIXTURES BY AIR IN CALIFORNIA.

Annual Weeds – Hand-Held or High-Volume Equipment
For control of weeds listed in the **ANNUAL WEEDS RATE TABLE**, apply a 0.5 percent solution of this product to weeds less than 6 inches in height or runner length. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds. For annual weeds over 6 inches tall, or unless otherwise specified, use a 1 percent solution.

For best results, use a 2 percent solution on harder-to-control perennials, such as Bermudagrass, dock, field bindweed, hemp dogbane, milkweed and Canada thistle.

When using application methods that result in less than complete coverage, use a 5 percent solution for annual and perennial weeds and a 5 to 10 percent solution for woody brush and trees.

Annual Weeds – Tank Mixtures with Atrazine for Fallow and Reduced Tillage Systems
For use only in Colorado, Kansas, Nebraska, Oklahoma, Oregon. South Dakota and Washington. In Oregon and Washington, do not exceed 1 pound of atrazine per acre.

24 to 28 fluid ounces of this product plus 1 to 2 pounds of atrazine per acre will control the following weeds: Barnyardgrass (requires 28 ounces for control), downy brome, green foxtail, lambsquarters, prickly lettuce, tansy mustard, pigweed, field sandbur, stinkgrass, Russian thistle, volunteer wheat, witchgrass and kochia (add 1/8 pound of dicamba for control). The individual tank mix product must be registered for use on this site.

PERENNIAL WEEDS RATE TABLE
(Alphabetically by Species)

Apply to actively growing perennial weeds.

NOTE: If weeds have been mowed or tilled, do not treat until plants have resumed active growth and have reached the specified stages.
Repeat treatments may be necessary to control weeds regenerating from underground parts or seed.
Repeat treatments must be made prior to crop emergence.
Unless otherwise stated, allow 7 or more days after application before tillage.
Best results are obtained when soil moisture is adequate for active weed growth.

Weed Species	Rate (QT/A)	Water Volume (GPA)	Hand-Held % Solution
Alfalfa	**1 – 2**	**3 – 10**	**2%**
Make applications after the last hay cutting in the fall. Allow alfalfa to regrow to a height of 6 to 8 inches or more prior to treatment. Applications should be followed with deep tillage at least 7 days after treatment, but before soil freeze-up.			
Alligatorweed	**4**	**3 – 20**	**1.5%**
For partial control, apply when most of the plants are in bloom. Repeat applications will be required to maintain control.			
Anise (fennel)	**--**	**--**	**1 – 2%**
Apply as a spray-to-wet treatment. Optimum results are obtained when plants are treated at the bud to full-bloom stage of growth.			
Bahiagrass	**3 – 5**	**3 – 20**	**2%**
Apply when most plants have reached the early head stage.			
Bentgrass	**1.5**	**10 – 20**	**2%**
For suppression in grass seed production areas. For ground applications only. Ensure entire crown area has resumed growth prior to a fall application. Bentgrass should have at least 3 inches of growth. Tillage prior to treatment should be avoided. For best results, tillage 7 to 10 days after application.			
Bermudagrass	**3 – 5**	**3 – 20**	**2%**
For control, apply 5 quarts of this product per acre. For partial control, apply 3 quarts per acre. Treat when Bermudagrass is actively growing and seedheads are present. Retreatment may be necessary to maintain control.			
Bermudagrass, Water (knotgrass)	**1 – 1.5**	**5 – 10**	**2%**

Apply 1.5 quarts of this product in 5 to 10 gallons of water per acre. Apply when water Bermudagrass is 12 to 18 inches in length. Allow 7 or more days before tilling, flushing or flooding the field.

Fall applications only: Apply 1 quart of this product in 5 to 10 gallons of water per acre. Fallow fields should be tilled prior to application. Apply prior to frost on water Bermudagrass that is 12 to 18 inches in length.

This product is not registered in California for use on water Bermudagrass.

Bindweed, field	**0.5 – 5**	**3 – 20**	**2%**

Do not treat when weeds are under drought stress as good soil moisture is necessary for active growth.

For control, apply 4 to 5 quarts of this product per acre west of the Mississippi River and 3 to 4 quarts east of the Mississippi River. Apply when the weeds are at or beyond full bloom. For best results, apply in late summer or fall. Fall treatments must be applied before a killing frost.

Also for control, apply 2 quarts of this product plus ½ pound of dicamba in 10 to 20 gallons of water per acre. Do not apply by air.

For suppression on irrigated agricultural land, apply 1 to 2 quarts of this product plus 1 pound of 2,4-D in 10 to 20 gallons of water per acre with ground equipment only. Applications should be made following harvest or in fall fallow ground when the bindweed is actively growing and the majority of runners are 12 inches or more in length. The use of at least one irrigation will promote active bindweed growth.

For suppression, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre for ground applications and 3 to 5 gallons of water per acre for aerial applications. Apply by air in fallow and reduced tillage systems only. Applications should be delayed until maximum emergence has occurred and when vines are between 6 to 18 inches in length. The individual tank mix product must be registered for use on this site.

In California only, apply 1 to 5 quarts of this product per acre. Actual rate needed for suppression or control will vary within this range depending on local conditions. For suppression on irrigated land where annual tillage is performed, apply 1 quart of this product in 3 to 10 gallons of water per acre. Apply to bindweed that has reached a length of 12 inches or greater. Allow maximum weed emergence and runner growth. Allow 3 or more days after application before tillage.

Bluegrass, Kentucky	**1 – 2**	**3 – 40**	**2%**

Apply 2 quarts of this product in 10 to 40 gallons of water per acre when most plants have reached boot-to-early seedhead stage of development. For partial control in pasture or hay crop renovation, apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to actively growing plants when most have reached 4 to 12 inches in height.

Blueweed, Texas	**3 – 5**	**3 – 40**	**2%**

Apply 4 to 5 quarts of this product per acre west of the Mississippi River and 3 to 4 quarts per acre east of the Mississippi River. Apply when plants are at or beyond full bloom. New leaf development indicates active growth. For best results, apply in late summer or fall. Fall treatments must be applied before a killing frost.

Brackenfern	**3 – 4**	**3 – 40**	**1 – 1.5%**

Apply to fully expanded fronds that are at least 18 inches long.

Bromegrass, smooth	**1 – 2**	**3 – 40**	**2%**

Apply 2 quarts of this product in 10 to 40 gallons of water per acre when most plants have reached boot-to-early seedhead stage of development. For partial control in pasture or hay crop renovation, apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to actively growing plants when most have reached 4 to 12 inches in height.

Bursage, woolly-leaf	**--**	**3 – 20**	**2%**

For control, apply 2 quarts of this product plus ½ pound of dicamba per acre. For partial control, apply 1 quart of this product plus ½ pound of dicamba per acre. Apply when plants are producing new active growth which has been initiated by moisture for at least 2 weeks and when plants are at or beyond flowering. The individual tank mix product must be registered for use on this site.

Canarygrass, reed	**2 – 3**	**3 – 40**	**2%**

For best results, apply when most plants have reached the boot-to-head stage of growth.

Cattail	**3 – 5**	**3 – 40**	**2%**

Apply when most plants have reached the early head stage.

Clover; red or white	**3 – 5**	**3 –20**	**2%**

Apply when most plants have reached the early bud stage.

Also for control, apply 16 to 32 fluid ounces of this product plus ½ to 1 pound of 2,4-D in 3 to 10 gallons of water per acre. The individual tank mix product must be registered for use on this site.

Cogongrass	**3 – 5**	**10 – 40**	**2%**

Apply when cogongrass is at least 18 inches tall in late summer or fall. Due to uneven stages of growth and the dense nature of vegetation preventing good spray coverage, repeat treatments may be necessary to maintain control.

Dallisgrass	**3 – 5**	**3 – 20**	**2%**

Apply when most plants have reached the early head stage.

Dandelion	**3 – 5**	**3 – 40**	**2%**

Apply when most plants have reached the early bud stage of growth.

Also for control, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre. The individual tank mix product must be registered for use on this site.

Dock, curly	**3 – 5**	**3 – 40**	**2%**

Apply when most plants have reached the early bud stage of growth.

Also for control, apply 16 to 32 fluid ounces of this product plus ½ to 1 pound of 2,4-D in 3 to 10 gallons of water per acre. The individual tank mix product must be registered for use on this site.

Dogbane, hemp	**4**	**3 – 40**	**2%**

Apply when most plants have reached the late bud to flower stage of growth. Following crop harvest or mowing, allow weeds to regrow to a mature stage prior to treatment. For best results, apply in late summer or fall. For suppression, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre for ground applications and 3 to 5 gallons of water per acre for aerial applications. Delay applications until maximum emergence of dogbane has occurred. The individual tank mix product must be registered for use on this site.

Fescue (except tall)	**3 – 5**	**3 – 20**	**2%**

Apply when most plants have reached the early head stage.

Fescue, tall	**1 – 3**	**3 – 40**	**2%**

Apply 3 quarts of this product per acre when most plants have reached boot-to-early seedhead stage of development.

Fall applications only. Apply 1 quart of this product in 3 to 10 gallons of water per acre. Apply to fescue in the fall when plants have 6 to 12 inches of new growth. A sequential application of 1 pint per acre of this product will improve long-term control and control seedlings germinating after fall treatments or the following spring.

Guineagrass	**2 – 3**	**3 – 40**	**1%**

Apply when most plants have reached at least the 7-leaf stage of growth. Ensure thorough coverage when using hand-held equipment. In Texas and ridge of Florida, use 2 quarts for control. In the flatwoods region of Florida, 3 quarts is required for control.

Horsenettle	**3 – 5**	**3 – 20**	**2%**

Apply when most plants have reached the early bud stage.

Horseradish	**4**	**3 – 40**	**2%**

Apply when most plants have reached the late bud to flower stage of growth. For best results, apply in late summer or fall.

Iceplant	**--**	**--**	**1.5 – 2%**

Iceplant should be at or beyond the early bud stage of growth. Thorough coverage is necessary for best control.

Jerusalem artichoke	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early bud stage.

Johnsongrass	**0.5 – 3**	**3 – 40**	**1%**

In annual cropping systems, apply 1 to 2 quarts of this product per acre. Apply 1 quart of this product in 3 to 10 gallons of water per acre. Use 2 quarts of this product when applying 10 to 40 gallons of water per acre. In non-crop, or areas where annual tillage (no-till) is not practiced, apply 2 to 3 quarts of this product in 10 to 40 gallons of water per acre.

For best results, apply when most plants have reached the boot-to-head stage of growth or in the fall prior to frost. Allow 7 or more days after application before tillage. Do not tank mix with residual herbicides when using 1 quart of this product per acre.

For burndown of Johnsongrass, apply 1 pint of this product in 3 to 10 gallons of water per acre before the plants reach a height of 12 inches. For this use, allow at least 3 days after treatment before tillage.

Spot treatment (partial control or suppression) – Apply a 1 percent solution of this product when Johnsongrass is 12 to 18 inches in height. Coverage should be uniform and complete.

Kikuyugrass	**2 – 3**	**3 – 40**	**2%**

Spray when most kikuyugrass is at least 8 inches in height (3- to 4-leaf stage of growth). Allow 3 or more days after application before tillage.

Knapweed	**4**	**3 – 40**	**2%**

Apply when most plants have reached the late bud to flower stage of growth. For best results, apply in

late summer or fall.

Lantana	--	--	**1 – 1.25%**

Apply at or beyond the bloom stage of growth. Use the higher application rate for plants that have reached the woody stage of growth.

Lespedeza	**3 – 5**	**3 – 20**	**2%**

Apply when most plants have reached the early bud stage.

Milkweed, common	3	3 – 40	2%

Apply when most plants have reached the late bud to flower stage of growth.

Muhly, wirestem	**1 – 2**	**3 – 40**	**2%**

Use 1 quart of this product in 3 to 10 gallons of water per acre. Use 2 quarts of this product when applying 10 to 40 gallons of water per acre or in pasture, sod or non-crop areas. Spray when the wirestem muhly is 8 inches or more in height. Do not till between harvest and fall applications or in the fall or spring prior to spring applications. Allow 3 or more days after application before tillage.

Mullein, common	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early bud stage.

Napiergrass	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early head stage.

Nightshade, silverleaf	**2**	**3 – 10**	**2%**

Applications should be made when at least 60 percent of the plants have berries. Fall treatments must be applied before a killing frost.

Nutsedge, purple or yellow	**0.5 – 3**	**3 – 40**	**1 – 2%**

Apply 3 quarts of this product per acre or apply a 1 to 2 percent solution for control of nutsedge plants and immature nutlets attached to treated plants. Treat when plants are in flower or when new nutlets can be found at rhizome tips. Nutlets that have not germinated will not be controlled and may germinate following treatment. Repeat treatments will be required for long-term control of ungerminated tubers.

Sequential applications: 1 to 2 quarts of this product in 3 to 10 gallons of water per acre will also provide control. Make applications when a majority of the plants are in the 3- to 5-leaf stage (less than 6 inches tall). Repeat this application, as necessary, when newly emerging plants reach the 3- to 5-leaf stage. Subsequent applications will be necessary for long-term control.

For partial control of existing plants, apply 1 pint to 2 quarts of this product in 3 to 40 gallons of water per acre. Treat when plants have 3 to 5 leaves and most are less than 6 inches tall. Repeat treatments will be required to control subsequent emerging plants or regrowth of existing plants.

Orchardgrass	**1 – 2**	**3 – 40**	**2%**

Apply 2 quarts of this product in 10 to 40 gallons of water per acre when most plants have reached boot-to-early seedhead stage of development. For partial control in pasture or hay crop renovation, apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to actively growing plants when most have reached 4 to 12 inches in height.

Orchardgrass sods going to no-till corn: Apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to orchardgrass that is a minimum of 12 inches tall for spring applications and 6 inches tall for fall applications. Allow at least 3 days following application before planting. A sequential application of atrazine will be necessary for optimum results. The individual tank mix product must be registered for use on this site.

Pampasgrass	--	--	**1.5 – 2%**

Pampasgrass should be at or beyond the boot stage of growth. Thorough coverage is necessary for best control.

Paragrass	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early head stage.

Phragmites	**3 – 5**	**10 – 40**	**1 – 2%**

For partial control and for best results, treat during late summer or fall when plants are actively growing and in full bloom. Treatment before or after this stage may lead to reduced control. Due to the dense nature of the vegetation, which may prevent good spray coverage or uneven stages of growth, repeat treatments may be necessary to maintain control. Visual control symptoms will be slow to develop.

Poison hemlock	--	--	**1 – 2%**

Apply as a spray-to-wet treatment. Optimum results are obtained when plants are treated at the bud to full-bloom stage of growth.

Pokeweed, common	**1**	**3 – 40**	**2%**

Apply to actively growing plants up to 24 inches tall.

Quackgrass	**1 – 3**	**3 – 40**	**2%**

In annual cropping systems, or in pastures and sods followed by deep tillage: Apply 1 quart of this product in 3 to 10 gallons of water per acre. For 10 to 40 gallons of water per acre, apply 2 quarts of this product. Do not tank mix with residual herbicides when using the 1-quart rate. Spray when quackgrass is 6 to 8 inches in height. Do not till between harvest and fall applications or in fall or spring prior to spring application. Allow 3 or more days after application before tillage. In pastures or sods, use a moldboard plow for best results.

In pastures, sods or non-crop areas where deep tillage does not follow application: Apply 2 to 3 quarts of this product in 10 to 40 gallons of water per acre when the quackgrass is greater than 8 inches tall.

Redvine	**0.75 – 2**	**5 – 10**	**2%**

For suppression, apply 24 fluid ounces of this product per acre at each of two applications 7 to 14 days apart or a single application of 2 quarts per acre. Apply specified rates in 5 to 10 gallons of water per acre. Apply in late September or early October to plants that are at least 18 inches tall and have been growing 45 to 60 days since the last tillage operation. Make applications at least 1 week before a killing frost.

Reed, giant	--	--	**2%**

Best results are obtained when applications are made in late summer to fall.

Ryegrass, perennial	**1 – 3**	**3 – 40**	**1%**

In annual cropping systems apply 1 to 2 quarts of this product per acre. Apply 1 quart of this product in 3

to 10 gallons of water per acre. Use 2 quarts of this product when applying 10 to 40 gallons of water per acre. In non-crop, or areas where annual tillage (no-till) is not practiced, apply 2 to 3 quarts of this product in 10 to 40 gallons of water per acre.

For best results, apply when most plants have reached the boot-to-head stage of growth or in the fall prior to frost. Do not tank-mix with residual herbicides when using 1 quart of this product per acre.

Smartweed, swamp	3 – 5	3 – 40	2%

Apply when most plants have reached the early bud stage of growth. Also for control, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre in the late summer or fall. The individual tank mix product must be registered for use on this site.

Sowthistle, perennial	2 – 3	3 – 40	2%

Apply when most plants are at or beyond the bud stage of growth. After harvest, mowing or tillage in the late summer or fall, allow at least 4 weeks for initiation of active growth and rosette development prior to the application of this product. Fall treatments must be applied before a killing frost. Allow 3 or more days after application before tillage.

Spurge, leafy	--	3 – 10	2%

For suppression, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre in the late summer or fall. If mowing has occurred prior to treatment, apply when most of the plants are 12 inches tall. The individual tank mix product must be registered for use on this site.

Starthistle, yellow	2	10 – 40	2%

Best results are obtained when applications are made during the rosette, bolting and early flower stages.

Sweet potato, wild	--	--	2%

For partial control, apply to plants that are at or beyond the bloom stage of growth. Repeat applications may be required.

Thistle, artichoke	--	--	2%

For partial control, apply to plants that are at or beyond the bloom stage of growth. Repeat applications may be required.

Thistle, Canada	2 – 3	3 – 40	2%

Apply when most plants are at or beyond the bud stage of growth. After harvest, mowing or tillage in the late summer or fall, allow at least 4 weeks for initiation of active growth and rosette development prior to the application of this product. Fall treatments must be applied before a killing frost. Allow 3 or more days after application before tillage.

For suppression in the spring, apply 1 quart of this product, or 1 pint of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre. Allow rosette regrowth to a minimum of 6 inches in diameter before treating. Applications can be made as long as leaves are still green and plants are actively growing at the time of application. Allow 3 or more days after application before tillage. The individual tank mix product must be registered for use on this site.

Timothy	2 – 3	3 – 40	2%

For best results, apply when most plants have reached the boot-to-head stage of growth.

Torpedograss	4 – 5	3 – 40	2%

For partial control, apply when most plants are at or beyond the seedhead stage of growth. Repeat applications will be required to maintain control. Fall treatments must be applied before frost.

Trumpetcreeper	**2**	**5 – 10**	**2%**

For partial control, apply in late September or October, to plants that are at least 18 inches tall and have been growing 45 to 60 days since the last tillage operation. Make applications at least 1 week before a killing frost.

Vaseygrass	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early head stage.

Velvetgrass	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early head stage.

Wheatgrass, western	**2 – 3**	**3 – 40**	**2%**

For best results, apply when most plants have reached the boot-to-head stage of growth.

WOODY BRUSH AND TREES RATE TABLE

Apply this product after full leaf expansion, unless otherwise directed. Use higher rate for larger plants and/or dense areas of growth. On vines, use the higher rate for plants that have reached the woody stage of growth. Best results are obtained when application is made in late summer or fall after fruit formation.

In arid areas, best results are obtained when applications are made in the spring to early summer when brush species are at high moisture content and are flowering.

Unless otherwise directed, apply broadcast treatments in 3 to 40 gallons of water per acre. Ensure thorough coverage when using hand-held equipment. Symptoms may not appear prior to frost or senescence with fall treatments.

Allow 7 or more days after application before tillage, mowing or removal. Repeat treatments may be necessary to control plants regenerating from underground parts or seed. Some autumn colors on undesirable deciduous species are acceptable provided no major leaf drop has occurred. Reduced performance may result if fall treatments are made following a frost.

Weed Species	Rate (QT/A)	Hand-Held % Solution
Alder	3 – 4	1 – 1.5%
Ash*	2 – 5	1 – 2%
Aspen, quaking	2 – 3	1 – 1.5%
Bearmat (Bearclover) *	2 – 5	1 – 2%
Beech *	2 – 5	1 – 2%
Birch	2 – 3	1 – 1.5%
Blackberry	3 – 4	1 – 1.5%

Make applications after plants have reached full leaf maturity. Best results are obtained when applications are made in late summer or fall. Applications may also be made after leaf drop and until a killing frost or as long as stems are green. After berries have set or dropped in late fall, blackberry can be controlled by applying a ¾ percent solution of this product. For control of blackberries after leaf drop and until killing frost or as long as stems are green, apply 3 to 4 quarts of this product in 10 to 40 gallons of water per acre.

Blackgum	2 – 5	1 – 2%
Bracken	2 – 5	1 – 2%
Broom: French, Scotch	--	1.5 – 2%
Buckwheat, California *	--	1 – 2%

Thorough coverage of foliage is necessary for best results.

Cascara *	2 – 5	1 – 2%
Catsclaw *	--	1 – 1.5%
Ceanothus *	2 – 5	1 – 2%
Chamise	--	1%

Thorough coverage of foliage is necessary for best results.

Cherry: bitter, black, pin	2 – 3	1 – 1.5%
Coyote brush	--	1.5 – 2%

Apply when at least 50 percent of the new leaves are fully developed.

Dogwood *	2 – 5	1 – 2%
Elderberry	2 – 3	1 – 1.5%
Elm *	2 – 5	1 – 2%
Eucalyptus	--	2%

For control of eucalyptus resprouts, apply when resprouts are 6 to 12 feet tall. Ensure complete coverage. Avoid application to drought-stressed plants.

Florida holly (Brazilian Peppertree) *	2 – 5	1 – 2%
Gorse *	2 – 5	1 – 2%
Hasardia *	--	1 – 2%

Thorough coverage of foliage is necessary for best results.

Hawthorn	2 – 3	1 – 1.5%
Hazel	2 – 3	1 – 1.5%
Hickory *	2 – 5	1 – 2%

Honeysuckle	3 – 4	1 – 1.5%
Hornbeam, American *	2 – 5	1 – 2%
Kudzu	4 – 5	2%

Repeat applications may be required to maintain control.

Locust, black *	2 – 4	1 – 2%
Madrone resprouts *	--	2%

Apply to resprouts that are 3 to 6 feet tall. Best results are obtained with spring/early summer treatments.

Manzanita *	2 – 5	1 – 2%
Maple, red	2 – 4	1 – 1.5%

Apply a 1 to 1.5 percent solution when at least 50 percent of the new leaves are fully developed. For partial control, apply 2 to 4 quarts of this product per acre.

Maple, sugar	--	1 – 1.5%

Apply when at least 50 percent of the new leaves are fully developed.

Monkey flower *	--	1 – 2%

Thorough coverage of foliage is necessary for best results.

Oak; black, white *	2 – 4	1 – 2%
Oak, post	3 – 4	1 – 1.5%
Oak, northern	--	1 – 1.5%

Apply when at least 50 percent of the new pin leaves are fully developed.

Oak, southern red	2 – 3	1 – 1.5%
Persimmon *	2 – 5	1 – 2%
Pine	2 – 5	1 – 2%
Poison ivy/Poison oak	4 – 5	2%

Repeat applications may be required to maintain control. Fall treatments must be applied before leaves lose green color.

Poplar, yellow *	2 – 5	1 – 2%
Redbud, eastern	2 – 5	1 – 2%
Rose, multiflora	2	3 – 40 1%

Treatments should be made prior to leaf deterioration by leaf-eating insects.

Russian olive *	2 – 5	1 – 2%
Sage, black	--	1%
Thorough coverage of foliage is necessary for best results.		
Sage, white *	2 – 5	1 – 2%
Sage brush, California	--	1%
Thorough coverage of foliage is necessary for best results.		
Salmonberry	2 – 3	1 – 1.5%
Saltcedar	2 – 5	1 – 2%
Sassafras *	2 – 5	1 – 2%
Sourwood *	2 – 5	1 – 2%
Sumac; poison smooth, winged *	2 – 4	1 – 2%
Sweetgum	2 – 3	1 – 1.5%
Swordfern *	2 – 5	1 – 2%
Tallowtree, Chinese	--	1%
Thorough coverage of foliage is necessary for best results.		
Tan oak resprouts *	--	2%
Apply to resprouts that are less than 3 to 6 feet tall. Best results are obtained with fall applications.		
Thimbleberry	2 – 3	1 – 1.5%
Tobacco, tree *	--	1 – 2%
Trumpetcreeper	2 – 3	1 – 1.5%
Vine maple *	2 – 5	1 – 2%
Virginia creeper	2 – 5	1 – 2%
Waxmyrtle, southern *	2 – 5	1 – 2%
Willow	3 – 4	1 – 1.5%

* Partial control.

GENERAL INFORMATION
(How This Product Works)

Product Description: This product is a postemergence, systemic herbicide with no soil residual activity. It gives broad-spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid containing surfactant and no additional surfactant is needed.

Optional alternate statement: It is formulated as a water-soluble liquid containing **14.5 percent** surfactant and no additional surfactant is needed or recommended.

Time to Symptoms: This product moves through the plant from the point of foliage contact to and into the root system. Visible effects on most annual weeds occur within 2 to 4 days, but on most perennial weeds may not occur for 7 days or more. Extremely cool or cloudy weather following treatment may slow activity of this product and delay development of visual symptoms. Visible effects are a gradual wilting and yellowing of the plant which advances to complete browning of above-ground growth and deterioration of underground plant parts.

Mode of Action in Plants: The active ingredient in this product inhibits an enzyme found only in plants and microorganisms that is essential to formation of specific amino acids.

Cultural Considerations: Reduced control may result when applications are made to annual or perennial weeds that have been mowed, grazed or cut, and have not been allowed to regrow to the specified stage for treatment.

Rainfastness: Heavy rainfall soon after application may wash this product off of the foliage and a repeat application may be required for adequate control.

No Soil Activity: Weeds must be emerged at the time of application to be controlled by this product. Weeds germinating from seed after application will not be controlled. Unemerged plants arising from unattached underground rhizomes or rootstocks of perennials will not be affected by the herbicide and will continue to grow.

Tank Mixing: This product does not provide residual weed control. For subsequent residual weed control, follow a label-approved herbicide program. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used. Use according to the most restrictive label directions for each product in the mixture.

Buyer and all users are responsible for all loss or damage in connection with the use or handling of mixtures of this product with herbicides or other materials that are not expressly specified in this label. Mixing this product with herbicides or other materials not specified on this label may result in reduced performance.

Annual Maximum Use Rate: The combined total of all treatments must not exceed 10.6 quarts of this product per acre per year. The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredient, whether applied as mixtures or separately. Calculate the application rates and ensure that the total use of this and other glyphosate or sulfosate containing products does not exceed stated maximum use rates.

ATTENTION

AVOID CONTACT OF HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS (EXCEPT AS SPECIFIED FOR INDIVIDUAL GLYPHOSATE TOLERANT CROPS), DESIRABLE PLANTS AND TREES, BECAUSE SEVERE INJURY OR DESTRUCTION MAY RESULT.

AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended. The likelihood of injury occurring from the use of this product increases when winds are gusty, as wind velocity increases, when wind direction is constantly changing or when there are other meteorological conditions that favor spray drift. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or fine particles (mist) that are likely to drift. AVOID APPLYING AT EXCESSIVE SPEED OR PRESSURE.

NOTE: Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences.

MIXING
Clean sprayer parts immediately after using this product by thoroughly flushing with water.

NOTE: REDUCED RESULTS MAY OCCUR IF WATER CONTAINING SOIL IS USED, SUCH AS VISIBLY MUDDY WATER OR WATER FROM PONDS AND DITCHES THAT IS NOT CLEAR.

Mixing with Water
This product mixes readily with water. Mix spray solution of this product as follows: Fill the mixing or spray tank with the required amount of water. Add the specified amount of this product near the end of the filling process and mix well. Use caution to avoid siphoning back into the carrier source. Use approved anti-back siphoning devices where required by state or local regulations. During mixing and application, foaming of the spray solution may occur. To prevent or minimize foam, avoid the use of mechanical agitators, terminate by-pass and return lines at the bottom of the tank and, if needed, use an approved anti-foam or defoaming agent.

Tank Mixing Procedure
When tank mixing, read and carefully observe label directions, cautionary statements and all information on the labels of all products used. Add the tank-mix product to the tank as directed by the label. Maintain agitation and add the specified amount of this product.

Maintain good agitation at all times until the contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation may be required to resuspend the mixture before spraying is resumed.

Keep by-pass line on or near the bottom of the tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh.

Always predetermine the compatibility of labeled tank mixtures of this product with water carrier by mixing small proportional quantities in advance.

Refer to the TANK MIXING section of GENERAL INFORMATION for additional precautions.

Mixing for Hand-Held Sprayers
Prepare the desired volume of spray solution by mixing the amount of this product in water as shown in the following table:

Spray Solution

Desired Volume	Amount of Glyfos X-TRA					
	½%	1%	1 ½%	2%	5%	10%
1 gal	2/3 oz.	1-1/3 oz.	2 oz.	2-2/3 oz.	6-1/2 oz.	13 oz.
25 gal	1 pt	1 qt	1-1/2 qt	2 qt	5 qt	10 qt

100 gal	2 qt	1 gal	1-1/2 gal	2 gal	5 gal	10 gal

2 tablespoons = 1 fluid ounce

For use in backpack, knapsack or pump-up sprayers, mix the specified amount of this product with water in a larger container. Fill sprayer with the mixed solution.

Colorants or Dyes
Agriculturally approved colorants or marking dyes may be added to this product. Colorants or dyes used in spray solutions of this product may reduce performance, especially at lower rates or dilution. Use colorants or dyes according to the manufacturer's recommendations.

APPLICATION EQUIPMENT AND TECHNIQUES

Do not apply this product through any type of irrigation system.

APPLY THESE SPRAY SOLUTIONS IN PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING DESIRED VOLUMES.

SPRAY DRIFT MANAGEMENT

AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

AERIAL SPRAY DRIFT MANAGEMENT

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outermost nozzles on the boom must not exceed ¾ the length of the wingspan or rotor.

2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they should be observed.

Importance of droplet size
The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see the **Wind, Temperature and Humidity,** and **Temperature Inversion** sections of this label).

Controlling droplet size
- **Volume:** Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with the higher rated flows produce larger droplets.

- **Pressure:** Use the lower spray pressures specified for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

- **Number of nozzles:** Use the minimum number of nozzles that provide uniform coverage.

- **Nozzle orientation:** Orienting nozzles so that the spray is released backwards, parallel to the airstream, will produce larger droplets than other orientations. Significant deflection from the horizontal will reduce droplet size and increase drift potential.

- **Nozzle type:** Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce larger droplets than other nozzle types.

- **Boom Length:** For some use patterns, reducing the effective boom length to less than ¾ of the wingspan or rotor length may further reduce drift without reducing the swath width.

- **Application Height:** Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces the exposure of the droplets to evaporation and wind.

Swath Adjustment
When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller droplets, etc.)

Wind
Drift potential is lowest between wind speeds of 2 to 10 miles per hour. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 miles per hour due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

Temperature and Humidity
When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions
Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicated good vertical air mixing.

Sensitive Areas
This product should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

Aerial Equipment
DO NOT APPLY THIS PRODUCT USING AERIAL SPRAY EQUIPMENT EXCEPT UNDER CONDITIONS AS SPECIFIED WITHIN THIS LABEL.

This product plus dicamba tank mixtures may not be applied by air in California.

TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Avoid direct application to any body of water.

Use the specified rates of this herbicide in 3 to 25 gallons of water per acre.

Drift control additives may be used. When a drift control additive is used, read and carefully observe the cautionary statements and all other information appearing on the additive label.

Ensure uniform application – To avoid streaked, uneven or overlapped application, use appropriate marking devices.

PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. The maintenance of an organic coating (paint) which meets aerospace specification MIL-C-38413 may prevent corrosion. To prevent corrosion of exposed parts, thoroughly wash aircraft after each day of spraying to remove residues of this product accumulated during spraying or from spills. Landing gear is most susceptible.

AERIAL APPLICATIONS IN CALIFORNIA
Aerial applications of this product are allowed in the following situations:

1. Prior to the emergence or transplanting of labeled crops.
2. Aid to burning for establishment and maintenance of fuel breaks.
3. Establishing fire perimeters and black lines.
4. Aid to prescribed burning.
5. Along fire roads.
6. Range conversion.
7. Habitat restoration and management.
8. Wildlife food plots.

Apply 1 to 5 quarts of this product in 5 to 15 gallons of water per acre using aerial (helicopter only) applications.

To broaden the spectrum of control, Garlon 4 may be tank mixed with this product at the rate of 0.5 to 2 quarts per acre. The rate of Garlon should not exceed ½ the rate of this product (e.g. 1 quart of Garlon to 2 quarts of this product) for best results.

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

AVOID DRIFT – DO NOT APPLY WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITION WHICH WILL ALLOW DRIFT. DRIFT MAY CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH TREATMENT IS NOT INTENDED. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Use the following guidelines when aerial applications are made near crops or desirable perennial vegetation after bud break and before total leaf drop, and/or near other desirable vegetation or annual crops.

1. Do not apply within 100 feet of any desirable vegetation or crop(s).
2. If wind up to 5 miles per hour is blowing toward desirable vegetation or crop(s), do not apply within a minimum of 500 feet of the desirable vegetation or crop(s).
3. Winds blowing from 5 to 10 miles per hour toward desirable vegetation or crop(s) may require buffer zones in excess of 500 feet.
4. Do not apply when winds are in excess of 10 miles per hour or when inversion conditions exist.
5. APPLY BY AIR ONLY TO NONRESIDENTIAL AREAS.

Ground Broadcast Equipment
Use the specified rates of this product in 3 to 40 gallons of water per acre as a broadcast spray unless otherwise specified. As density of weeds increases, spray volume should be increased within the specified range to ensure complete coverage. Carefully select proper nozzles to avoid spraying a fine mist. For best results with ground application equipment, use flat-fan nozzles. Check for even distribution of spray droplets.

Hand-Held or High-Volume Equipment
Apply to foliage of vegetation to be controlled. For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff. Use coarse sprays only.

For control of weeds listed in the **ANNUAL WEEDS** section of **WEEDS CONTROLLED**, apply a ½ percent solution of this product to weeds less than 6 inches in height or runner length. For annual weeds over 6 inches tall, or unless otherwise specified, use a 1 percent solution. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds.

For best results, use a 2 percent solution on harder-to-control perennials, such as Bermudagrass, dock, field bindweed, hemp dogbane, milkweed and Canada thistle.

For low volume directed spray applications, use a 5 to 10 percent solution of this product for control or partial control of annual weeds, perennial weeds or woody brush and trees. Spray coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one half of the plant is important for best results. To ensure adequate spray coverage, spray both sides of large or tall woody brush and trees, when foliage is thick and dense, or where there are multiple sprouts.

Selective Equipment
This product may be applied through recirculating spray systems, shielded applicators, hooded sprayers, wiper applicators or sponge bars, after dilution and thorough mixing with water, to listed weeds growing in any non-crop site specified on this label.

A recirculating spray system directs the spray solution onto weeds growing above desirable vegetation, while spray solution not intercepted by weeds is collected and returned to the spray tank for reuse.

AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION, AS SERIOUS INJURY OR DEATH IS LIKELY TO OCCUR.

Applicators used above desired vegetation should be adjusted so that the lowest spray stream or wiper contact point is at least 2 inches above the desirable vegetation. Droplets, mist, foam or splatter of the herbicide solution settling on desirable vegetation is likely to result in discoloration, stunting or destruction.

Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. This may occur in dense clumps, severe infestations or when the height of the weeds varies so that not all weeds are contacted. In these instances, repeat treatment may be necessary.

Shielded and Hooded Applicators
A shielded or hooded applicator directs the herbicide solution onto weeds, while shielding desirable vegetation from the herbicide. Use nozzles that provide uniform coverage within the treated area. Keep shields on these sprayers adjusted to protect desirable vegetation. EXTREME CARE MUST BE EXERCISED TO AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

Wiper Applicators and Sponge Bars
A wiper or sponge applicator applies the herbicide solution onto weeds by rubbing the weed with an absorbent material containing the herbicide solution. Equipment must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation. Operate this equipment at ground speeds no greater than 5 miles per hour. Performance may be improved by reducing speed in areas of heavy weed infestations to ensure adequate wiper saturation. Better results may be obtained if

2 applications are made in opposite directions.

Avoid leakage or dripping onto desirable vegetation. Adjust height of applicator to ensure adequate contact with weeds. Keep wiping surfaces clean. Be aware that, on sloping ground, the herbicide solution may migrate, causing dripping on the lower end and drying of the wicks on the upper end of a wiper applicator.

Do not use wiper equipment when weeds are wet.

Mix only the amount of solution to be used during a 1-day period, as reduced activity may result from use of leftover solutions. Clean wiper parts immediately after using this product by thoroughly flushing with water.

For **Rope or Sponge Wick Applicators** – Solutions ranging from 33 to 75 percent of this product in water may be used.

For **Panel Applicators and pressure-feed systems** – Solutions ranging from 33 to 100 percent of this product in water may be used.

When applied as specified above, this product CONTROLS the following weeds:

Corn, volunteer
Panicum, Texas
Rye, common
Shattercane
Sicklepod
Spanishneedles
Starbur, bristly

When applied as specified above, this product SUPPRESSES the following weeds:

Beggarweed, Florida
Bermudagrass
Dogbane, hemp
Dogfennel
Guineagrass
Johnsongrass
Milkweed
Nightshade, silverleaf
Pigweed, redroot
Ragweed, common
Ragweed, giant
Smutgrass
Sunflower
Thistle, Canada
Thistle, musk
Vaseygrass
Velvetleaf

Injection Systems
This product may be used in aerial or ground injection spray systems. It may be used as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix this product with the undiluted concentrate of other products when using injection systems unless otherwise specified.

CDA Equipment
The rate of this product applied per acre by controlled droplet application (CDA) equipment must not be less than the amount specified in this label when applied by conventional broadcast equipment. For vehicle-mounted CDA equipment, apply 2 to 15 gallons of water per acre.

CDA equipment produces a spray pattern that is not easily visible. Extreme care must be exercised to avoid spray or drift contacting the foliage or any other green tissue of desirable vegetation, as damage or destruction is likely to result.

SITE AND USE RECOMMENDATIONS

Detailed instructions follow alphabetically, by site.

Unless otherwise specified, applications may be made to control any weeds listed in the annual, perennial and woody brush tables. Refer also to the **SELECTIVE EQUIPMENT** section.

Cut Stumps
Cut stump treatments may be made on any site listed on this label. This product will control many types of woody brush and tree species, some of which are listed below. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 50 to 100 percent solution of this product to the freshly-cut surface **immediately after** cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

Alder	Saltcedar
Eucalyptus	Sweetgum
Madrone	Tan oak
Oak	Willow
Reed, giant	

DO NOT MAKE CUT STUMP APPLICATIONS WHEN THE ROOTS OF DESIRABLE WOODY BRUSH OR TREES MAY BE GRAFTED TO THE ROOTS OF THE CUT STUMPS. Some sprouts, stems, or trees may share the same root system. Adjacent trees having a similar age, height and spacing may signal shared roots. Whether grafted or shared, injury is likely to occur to non-treated stems/trees when one or more trees sharing commons roots are treated.

Forestry Site Preparation
This product can be used for the control or partial control of woody brush, trees and herbaceous weeds in forestry. This product can also be used for preparing or establishing wildlife openings within these sites and maintaining logging roads.

This product can be used for site preparation prior to planting any tree species, including Christmas trees, eucalyptus, hybrid tree cultivars and silvicultural nursery sites.

APPLICATION RATES AND TIMING

APPLICATION	GLYFOS X-TRA	SPRAY VOLUME GAL/A
BROADCAST		
Aerial	2 to 10 qts/a	5 to 30
Ground	2 to 10 qts/a	10 to 60
SPRAY-TO-WET		
Handgun Backpack	¾% to 2% by volume	spray-to-wet
LOW VOLUME DIRECTED SPRAY		
Handgun Backpack	5% to 10% by volume	partial coverage*

*For low volume directed spray applications, coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one-half of the plant is important for best results.

Use higher rates of this product within the specified range for control or partial control of woody brush, trees and hard-to-control perennial herbaceous weeds. For best results, apply to actively growing woody brush and trees after full leaf expansion and before fall color and leaf drop. Increase rates within the specified range for control of perennial herbaceous weeds any time after emergence and before seedheads, flowers or berries appear.

Use the lower rates of this product within the specified range for control of annual herbaceous weeds and actively growing perennial herbaceous weeds after seedheads, flowers or berries appear. Apply to the foliage of actively growing annual herbaceous weeds any time after emergence.

This product has no herbicidal or residual activity in the soil. Where repeat applications are necessary, do not exceed 10.6 quarts of this product per acre per year.

Tank Mixtures
Tank mixtures of this product may be used to increase the spectrum of vegetation controlled. When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements for each product in the mixture.

NOTE: For forestry site preparation, make sure the tank mix product is approved for use prior to planting the desired species. Observe planting interval restrictions.

Any specified rate of this product may be used in a tank mix with the following products for forestry site preparation.

PRODUCT	BROADCAST RATE
Arsenal Applicators Concentrate	2 to 16 fl oz/a
Escort™	½ to 3 ½ oz/a
Chopper™	4 to 32 fl oz/a
Garlon 4	1 to 4 qts/a
Oust™	1 to 4 oz/a

PRODUCT	SPRAY-TO-WET RATES
Arsenal Applicators Concentrate	1/32 % to ½ % by volume

PRODUCT	LOW VOLUME DIRECTED SPRAY RATES
Arsenal Applicators Concentrate	1/8 % to ½ % by volume

For control of herbaceous weeds, use the lower specified tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher specified rates.

Do not apply this product as an over-the-top broadcast spray for forestry conifer or hardwood release.

General Non-crop Areas and Industrial Sites
Use in areas such as airports, apartment complexes, Christmas tree farms, ditch banks, dry ditches, dry canals, fencerows, golf courses, industrial sites, lumber yards, manufacturing sites, office complexes, ornamental nurseries, parks, parking areas, petroleum tank farms and pumping installations, railroads, recreational areas, residential areas, roadsides, sod or turf seed farms, schools, storage areas, substations, warehouse areas, other public areas, and similar industrial and non-crop sites.

General Weed Control, Trim-and-Edge, Bare Ground
This product may be used in general non-crop areas. It may be applied with any application equipment described in this label. This product may be used to trim-and-edge around objects in non-crop sites, for spot treatment of unwanted vegetation and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product may be used prior to planting an area to ornamentals, flowers, turfgrass (sod or seed), or prior to laying asphalt or beginning construction projects.

Repeated applications of this product may be used, as weeds emerge, to maintain bare ground.

This product may be tank mixed with the following products. Refer to these products' labels for approved

non-crop sites and application rates. The individual tank mix product must be registered for use on this site.

Arsenal™
Clarity
Barricade™ 65WG
Diuron
Endurance™
Escort™
Garlon™ 3A
Garlon 4
Karmex™ DF
Krovar™ I DF
Manage®
Oust
Pendulum™ 3.3 EC
Pendulum WDG
Plateau™
Princep™ DF
Princep™ Liquid
Ronstar™ 50WP
Sahara™
Simazine
Surflan™
Telar™
Vanquish™
2,4-D

This product plus dicamba tank mixtures may not be applied by air in California.

When applied as a tank mixture for bare ground, this product provides control of the emerged annual weeds and control or partial control of emerged perennial weeds, woody brush and trees.

For control or partial control of the following perennial weeds, apply 1 to 2 quarts of this product plus 2 to 4 ounces of Oust per acre.

Bahiagrass
Bermudagrass
Broomsedge
Dallisgrass
Dock, curly
Dogfennel
Fescue, tall
Johnsongrass
Poorjoe
Quackgrass
Vaseygrass
Vervain, blue

Chemical Mowing – Perennials
This product will suppress perennial grasses listed in this section to serve as a substitute for mowing. Use 8 fluid ounces of this product per acre when treating tall fescue, fine fescue, orchardgrass, quackgrass or reed canarygrass covers. Use 6 fluid ounces of this product per acre when treating Kentucky bluegrass. Apply treatments in 10 to 40 gallons of spray solution per acre.

Use only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

Chemical Mowing – Annuals
For growth suppression of some annual grasses, such as annual ryegrass, wild barley and wild oats growing in coarse turf on roadsides or other industrial areas, apply 4 to 5 fluid ounces of this product in 10 to 40 gallons of spray solution per acre. Applications should be made when annual grasses are actively growing and before the seedheads are in the boot stage of development. Treatments may cause injury to the desired grasses.

***Bromus* Species and Medusahead in Pastures and Rangelands**
***Bromus* species.** This product may be used to treat downy brome (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), soft chess (*Bromus mollis*) and cheatgrass (*Bromus secalinus*) found in industrial, rangeland and pasture sites. Apply 8 to 16 fluid ounces of this product per acre on a broadcast basis.

For best results, treatment should coincide with early seedhead emergence of the most mature plants. Delaying the application until this growth stage will maximize the emergence of other weedy grass flushes. Applications should be made to the same site each year until seed banks are depleted and the desirable perennial grasses can become reestablished on this site.

Medusahead. To treat medusahead, apply 16 fluid ounces of this product per acre as soon as plants are actively growing, and prior to the 4-leaf stage. Applications may be made in the fall or spring.

Applications to brome and medusahead may be made using ground or aerial equipment. Aerial applications for these uses may be made using fixed wing or helicopter equipment. For aerial applications, apply in 2 to 10 gallons of water per acre. For applications using ground equipment, apply in 10 to 20 gallons of water per acre. When applied as directed in this label, there are no grazing restrictions.

Dormant Turfgrass
This product may be used to control or suppress many winter annual weeds and tall fescue for effective release of dormant Bermudagrass and bahiagrass turf. Treat only when turf is dormant and prior to spring greenup.

Apply 8 to 64 fluid ounces of this product per acre. Apply the specified rates in 10 to 40 gallons of water per acre. Use only in areas where Bermudagrass or bahiagrass are desirable ground covers and where some temporary injury or discoloration can be tolerated.

Treatments in excess of 16 fluid ounces per acre may result in injury or delayed greenup in highly maintained areas, such as golf courses and lawns. DO NOT apply tank mixtures of this product plus Oust in highly maintained turfgrass areas. For further uses, refer to the **ROADSIDES** section of this label, which gives rates for dormant Bermudagrass and bahiagrass treatments.

Actively Growing Bermudagrass
This product may be used to control or partially control many annual and perennial weeds for effective release of actively growing Bermudagrass. DO NOT apply more than 16 fluid ounces of this product per acre in highly maintained turfgrass areas. DO NOT apply tank mixtures of this product plus Oust in highly maintained turfgrass areas. For further uses, refer to the **ROADSIDES** section of this label, which gives rates for actively growing Bermudagrass treatments. Use only in areas where some temporary injury or discoloration can be tolerated.

Turfgrass Renovation, Seed or Sod Production
This product controls most existing vegetation prior to renovating turfgrass areas or establishing turfgrass grown for seed or sod. For maximum control of existing vegetation, delay planting or sodding to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses such as Bermudagrass, summer or fall applications provide the best control. Where existing vegetation is growing under mowed turfgrass management, apply this product after omitting at least one regular mowing to allow sufficient growth for good interception of the spray.

Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after application to allow translocation into underground plant parts.

Desirable turfgrasses may be planted following the above procedures.

Hand-held equipment may be used for spot treatment of unwanted vegetation growing in existing turfgrass. Broadcast or hand-held equipment may be used to control sod remnants or other unwanted vegetation after sod is harvested.

If application rates total 3 quarts per acre or less, no waiting period between treatment and feeding or livestock grazing is required. If the rate is greater than 3 quarts per acre, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Habitat Management
Habitat Restoration and Management
This product may be used to control exotic and other undesirable vegetation in habitat management and

natural areas, including rangeland and wildlife refuges. Applications can be made to allow recovery of native plant species, prior to planting desirable native species, and for similar broad spectrum vegetation control requirements. Spot treatments can be made to selectively remove unwanted plants for habitat management and enhancement.

Wildlife Food Plots
This product may be used as a site preparation treatment prior to planting wildlife food plots. Any wildlife food species may be planted after applying this product, or native species may be allowed to repopulate the area. If tillage is needed to prepare a seedbed, wait 7 days after application before tillage to allow translocation into underground plant parts.

Injection and Frill (Woody Brush and Trees)
This product may be used to control woody brush and trees by injection or frill applications. Apply this product using suitable equipment that must penetrate into the living tissue. Apply the equivalent of 1/25 fluid ounce (1 mL) of this product per each 2 to 3 inches of trunk diameter at breast height (DBH). This is best achieved by applying a 50 to 100 percent concentration of this product either to a continuous frill around the tree or as cuts evenly spaced around the tree below all branches. As tree diameter increases in size, better results are achieved by applying diluted material to a continuous frill or more closely spaced cuttings. Avoid application techniques that allow runoff to occur from frilled or cut areas in species that exude sap freely. In species such as this, make the frill or cuts at an oblique angle to produce a cupping effect and use a 100 percent concentration of this product. For best results, application should be made during periods of active growth and after full leaf expansion. This product will control many species, some of which are listed below:

Control	Partial Control
Oak	Black gum
Poplar	Dogwood
Sweetgum	Hickory
Sycamore	Maple, red

Ornamentals, Plant Nurseries and Christmas Trees
Post-Directed, Trim-and-Edge
This product may be used as a post-directed spray around established woody ornamental species such as arborvitae, azalea, boxwood, crabapple, eucalyptus, euonymus, fir, douglas fir, jojoba, hollies, lilac, magnolia, maple, oak, poplar, privet, pine, spruce and yew. This product may also be used to trim and edge around trees, buildings, sidewalks and roads, potted plants and other objects in a nursery setting.

Desirable plants may be protected from the spray solution by using shields or coverings made of cardboard or other impermeable material. DO NOT USE THIS PRODUCT AS AN OVER-THE-TOP BROADCAST SPRAY IN ORNAMENTALS AND CHRISTMAS TREES. Care must be exercised to avoid contact of spray, drift or mist with foliage or green bark of established ornamental species.

Site Preparation
This product may be used prior to planting any ornamental, nursery or Christmas tree species.

Wiper Applications
This product may be used through wick or other suitable wiper applicators to control or partially control undesirable vegetation around established eucalyptus or poplar trees. See the SELECTIVE EQUIPMENT section of this label for further information about the proper use of wiper applicators.

Greenhouse / Shadehouse
This product may be used to control weeds growing in and around greenhouses and shadehouses. Desirable vegetation must not be present during application and air circulation fans must be turned off.

Parks, Recreational and Residential Areas
This product may be used in parks, recreational and residential areas. It may be applied with any application equipment described in this label. This product may be used to trim-and-edge around trees,

fences, and paths, around buildings, sidewalks, and other objects in these areas. This product may be used for spot treatment of unwanted vegetation. This product may be used to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product may be used prior to planting an area to ornamentals, flowers, turfgrass (sod or seed), or prior to laying asphalt or beginning construction projects.

All of the instructions in the **GENERAL NON-CROP AREAS AND INDUSTRIAL SITES** section apply to park and recreational areas.

Railroads

All of the instructions in the **GENERAL NON-CROP AREAS AND INDUSTRIAL SITES** section apply to railroads.

Bare ground, Ballast and Shoulders, Crossings and Spot Treatment

This product may be used to maintain bare ground on railroad ballast and shoulders. Repeat applications of this product may be used, as weeds emerge, to maintain bare ground. This product may be used to control tall-growing weeds to improve line-of-sight at railroad crossings and reduce the need for mowing along rights-of-way. For crossing applications, up to 80 gallons of spray solution per acre may be used. This product may be tank mixed with the following products for ballast, shoulder, spot, bare ground and crossing treatments:

Arsenal	Krovar I DF
Clarity	Oust
Diuron	Sahara
Escort	Spike™
Garlon 3A	Telar
Garlon 4	Vanquish
Hyvar™ X	2,4-D

The individual tank mix product must be registered for use on this site.

Brush Control

This product may be used to control woody brush and trees on railroad rights-of-way. Apply 4 to 10 quarts of this product per acre as a broadcast spray, using boom-type or boomless nozzles. Up to 80 gallons of spray solution per acre may be used. Apply a ¾ to 2 percent solution of this product when using high-volume spray-to-wet applications. Apply a 5 to 10 percent solution of this product when using low volume directed sprays for spot treatment. This product may be mixed with the following products for enhanced control of woody brush and trees:

Arsenal	Garlon 4
Escort	Tordon™ K
Garlon 3A	

Bermudagrass Release

This product may be used to control or partially control many annual and perennial weeds for effective release of actively growing Bermudagrass. Apply 1 to 3 pints of this product in up to 80 gallons of spray solution per acre. Use the lower rate when treating annual weeds below 6 inches in height (or runner length). Use the higher rate as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Johnsongrass
Bluestem, silver	Trumpetcreeper
Fescue, tall	Vaseygrass

This product may be tank-mixed with Oust. If tank-mixed, use no more than 1 to 3 pints of this product with 1 to 2 ounces of Oust per acre. Use the lower rates of each product to control annual weeds less than 6 inches in height (or runner length) that are listed in this label and the Oust label. Use the higher rates as annual weeds increase in size and approach the flower or seedhead stages. These rates will

also provide partial control of the following perennial weeds:

Bahiagrass	Fescue, tall
Blackberry	Johnsongrass
Bluestem, silver	Poorjoe
Broomsedge	Raspberry
Dallisgrass	Trumpetcreeper
Dewberry	Vaseygrass
Dock, curly	Vervain, blue
Dogfennel	

Use only on well-established Bermudagrass. Bermudagrass injury may result from the treatment, but regrowth will occur under moist conditions. Do not repeat applications in the same season since severe injury may occur.

Roadsides
All of the instructions in the **GENERAL NON-CROP AREAS AND INDUSTRIAL SITES** section apply to roadsides.

Shoulder Treatments
This product may be used on road shoulders. It may be applied with boom sprayers, shielded boom sprayers, high-volume off-center nozzles, hand-held equipment, and similar equipment.

Guardrails and Other Obstacles to Mowing
This product may be used to control weeds growing under guardrails and around signposts and other objects along the roadside.

Spot Treatment
This product may be used as a spot treatment to control unwanted vegetation growing along roadsides.

Tank Mixtures
This product may be tank-mixed with the following products for shoulder, guardrail, spot and bare ground treatments:

Clarity	Princep Liquid
Diuron	Ronstar 50WP
Endurance	Sahara
Escort	Simazine
Krovar I DF	Surflan
Oust	Telar
Pendulum 3.3 EC	Vanquish
Pendulum WDG	2,4-D
Princep DF	

The individual tank mix product must be registered for use on this site.

See the **GENERAL NON-CROP AREAS AND INDUSTRIAL SITES** section of this label for general instructions for tank mixing.

Release of Bermudagrass or Bahiagrass

Dormant Applications
This product may be used to control or partially control many winter annual weeds and tall fescue for effective release of dormant Bermudagrass or bahiagrass. Treat only when turf is dormant and prior to spring greenup. This product may also be tank-mixed with Oust for residual control. Tank mixtures of this product with Oust may delay greenup.

For best results on winter annuals, treat when plants are in an early growth stage (below 6 inches in height) after most have germinated. For best results on tall fescue, treat when fescue is at or beyond the 4- to 6-leaf stage.

Apply 8 to 64 fluid ounces of this product per acre alone or in a tank mixture with ¼ to 1 ounce per acre of Oust. Apply the specified rates in t0 to 40 gallons of water per acre. Use only in areas where Bermudagrass or bahiagrass are desirable ground covers and where some temporary injury or discoloration can be tolerated. To avoid delays in greenup and minimize injury, add no more than 1 ounce of Oust per acre on Bermudagrass and no more than ½ ounce of Oust per acre on bahiagrass and avoid treatments when these grasses are in a semi-dormant condition.

Actively Growing Bermudagrass
This product may be used to control or partially control many annual and perennial weeds for effective release of actively growing Bermudagrass. Apply t to 3 pints of this product in t0 to 40 gallons of spray solution per acre. Use the lower rate when treating annual weeds below 6 inches in height (or runner length). Use the higher rate as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Johnsongrass
Bluestem, silver	Trumpetcreeper
Fescue, tall	Vaseygrass

This product may be tank-mixed with Oust. If tank-mixed, use no more than 1 to 2 pints of this product with 1 to 2 ounces of Oust per acre. Use the lower rates of each product to control annual weeds less than 6 inches in height (or runner length) that are listed in this label and the Oust label. Use the higher rates as annual weeds increase in size and approach the flower or seedhead stages. These rates will also provide partial control of the following perennial weeds:

Bahiagrass	Fescue, tall
Bluestem, silver	Johnsongrass
Broomsedge	Poorjoe
Dallisgrass	Trumpetcreeper
Dock, curly	Vaseygrass
Dogfennel	Vervain, blue

Use only on well-established Bermudagrass. Bermudagrass injury may result from the treatment, but regrowth will occur under moist conditions. Do not repeat applications of the tank mix in the same season since severe injury may occur.

Actively Growing Bahiagrass
For suppression of vegetative growth and seedhead inhibition of bahiagrass for approximately 45 days, apply 6 fluid ounces of this product in t0 to 40 gallons of water per acre. Apply 1 to 2 weeks after full greenup or after mowing to a uniform height of 3 to 4 inches. This application must be made prior to seedhead emergence.

For suppression up to 120 days, apply 4 fluid ounces of this product per acre, followed by an application of 2 to 4 fluid ounces per acre about 45 days later. Make no more than 2 applications per year.

A tank mixture of this product plus Oust may be used. Apply 6 fluid ounces of this product plus ¼ ounce of Oust per acre t to 2 weeks following an initial spring mowing. Make only one application per year.

Utility Sites
In utilities, this product can be used along electrical power, pipeline and telephone rights-of-way, and in other sites associated with these rights-of-way, such as substations, roadsides, railroads, or similar rights-of-way that run in conjunction with utilities.

This product can also be used for preparing or establishing wildlife openings within these sites, maintaining access roads and for side trimming along utility rights-of-way.

Tank Mixtures
Tank mixtures of this product may be used to increase the spectrum of control for herbaceous weeds, woody brush and trees. When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements for each product in the mixture. Any specified rate of this product may be used in a tank mix.

For control of herbaceous weeds, use the lower specified tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher specified rates.

NOTE: For side trimming treatments, use this product alone or in tank mixture with Garlon 4.

PRODUCT	BROADCAST RATE	USE SITES
Arsenal 2WSL	6 to 32 fl oz/acre	Utility Sites
Escort	1 to 2 oz/acre	Utility Sites
Garlon 3A*, Garlon 4	1 to 4 qts/acre	Utility Sites/ Side Trimming
Oust	1 to 4 oz/acre	Utility Sites

PRODUCT	SPRAY-TO-WET RATES	USE SITES
Arsenal 2WSL	1/16% to ½% by volume	Utility Sites
Escort	1 to 2 oz/acre	Utility Sites

PRODUCT	LOW VOLUME DIRECTED SPRAY RATES	USE SITES
Arsenal 2WSL	1/8% to ½% by volume	Utility Sites
Escort	1 to 2 oz/acre	Utility Sites

*Ensure that Garlon 3A is thoroughly mixed with water according to label directions before adding this product. Have spray mixture agitating at the time this product is added to avoid spray compatibility problems.

Bare Ground and Trim-and-Edge
This product may be used in utility sites and substations for bare ground, trim-and-edge around objects, spot treatment of unwanted vegetation and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product may be used prior to planting a utility site to ornamentals, flowers, turfgrass (sod or seed), or beginning construction projects.

Repeated applications of this product may be used, as weeds emerge, to maintain bare ground.

This product may be tank mixed with the following products. Refer to these products' labels for approved noncrop sites and application rates. The individual tank mix product must be registered for use on this site.

Arsenal
Banvel
Barricade™ 65WG
Plateau™
Princep™ DF
Princep™ Liquid

Diuron	Ronstar™ 50WP
Endurance™	Sahara™
Escort	Simazine
Garlon 3A	Surflan™

WEEDS CONTROLLED

Always use the higher rate of this product per acre within the specified range when weed growth is heavy or dense or weeds are growing in an undisturbed (noncultivated) area.

Reduced results may occur when treating weeds heavily covered with dust. For weeds that have been mowed, grazed or cut, allow regrowth to occur prior to treatment.

Refer to the following label sections for specified rates for the control of annual and perennial weeds and woody brush and trees. For difficult to control perennial weeds and woody brush and trees, where plants are growing under stressed conditions, or where infestations are dense, this product may be used at 5 to 10 quarts per acre for enhanced results.

Annual Weeds

Use 1 quart per acre if weeds are less than 6 inches in height or runner length and 1.5 quarts to 4 quarts per acre if weeds are over 6 inches in height or runner length or when weeds are growing under stressed conditions.

For spray-to-wet applications, apply a ½ percent solution of this product to weeds less than 6 inches in height or runner length. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds. For annual weeds over 6 inches tall, or for smaller weeds growing under stressed conditions, use a 1 to 2 percent solution. Use the higher rate for tough-to-control species or for weeds over 24 inches tall.

WEED SPECIES

Annoda, spurred
Barley*
Barnyardgrass*
Bittercress*
Black nightshade*
Bluegrass, annual*
Bluegrass, bulbous*
Bassia, fivehook
Brome, downy*
Brome, Japanese*
Browntop panicum*
Buttercup*
Carolina foxtail*
Carolina geranium
Castor bean
Cheatgrass*
Cheeseweed (*Malva parviflora*)
Chervil*
Chickweed*
Cocklebur*
Copperleaf, hophornbeam
Corn*
Corn speedwell*
Crabgrass*
Dwarfdandelion*
Eastern mannagrass*
Eclipta*
Fall panicum*
Falsedandelion*

Falseflax, smallseed*
Fiddleneck
Field pennycress*
Filaree
Fleabane, annual*
Fleabane, hairy (*Conyza bonariensis*)*
Fleabane, rough*
Florida pusley
Foxtail*
Goatgrass, jointed*
Goosegrass
Grain sorghum (milo)*
Groundsel, common*
Hemp sesbania
Henbit
Horseweed/Marestail (*Conyza canadensis)*
Itchgrass*
Johnsongrass, seedling
Junglerice
Knotweed
Kochia
Lambsquarters*
Little barley*
London rocket*
Mayweed
Medusahead*
Morningglory (*Ipomoea spp*)
Mustard, blue*
Mustard, tansy*
Mustard, tumble*
Mustard, wild*
Oats
Pigweed*
Plains/Tickseed coreopsis*
Prickly lettuce*
Puncturevine
Purslane, common
Ragweed, common*
Ragweed, giant
Red rice
Russian thistle
Rye*
Ryegrass*
Sandbur, field*
Shattercane*
Shepherd's purse*
Sicklepod
Signalgrass, broadleaf*
Smartweed, ladysthumb*
Smartweed, Pennsylvania*
Sowthistle, annual
Spanishneedles
Speedwell, purslane*
Sprangletop*
Spurge, annual
Spurge, prostrate*
Spurge, spotted*
Spurry, umbrella*

Starthistle, yellow
Stinkgrass*
Sunflower*
Teaweed/Prickly sida
Texas panicum*
Velvetleaf
Virginia copperleaf
Virginia pepperweed*
Wheat*
Wild oats*
Witchgrass*
Woolly cupgrass*
Yellow rocket

*When using field broadcast equipment (aerial applications or boom sprayers using flat-fan nozzles) these species will be controlled or partially controlled using 1 pint of this product per acre. Applications must be made using 3 to 10 gallons of carrier volume per acre. Use nozzles that ensure thorough coverage of foliage and treat when weeds are in an early growth stage.

Perennial Weeds
Best results are obtained when perennial weeds are treated after they reach the reproductive stage of growth (seedhead initiation in grasses and bud formation in broadleaves). For non-flowering plants, best results are obtained when the plants reach a mature stage of growth. In many situations, treatments are required prior to these growth stages. Under these conditions, use higher application rate within the specified range.

Ensure thorough coverage when using spray-to-wet treatments using hand-held equipment. When using hand-held equipment for low volume directed spot treatments, apply a 5 to 10 percent solution of this product.

Allow 7 or more days after application before tillage.

Weed Species	Rate (QT/A)	Hand-Held % Solution
Alfalfa*	1	2
Alligatorweed*	4	1.5
Anise (fennel)	2-4	1-2
Bahiagrass	3-5	2
Beachgrass, European (*Ammophila arenaria*)	-	5
Bentgrass*	1.5	2
Bermudagrass	5	2
Bermudagrass, water (knotgrass)	1.5	2
Bindweed, field	4-5	2
Bluegrass, Kentucky	2	2
Blueweed, Texas	4-5	2
Brackenfern	3-4	1-1.5
Bromegrass, smooth	2	2
Bursage, woolly-leaf	--	2
Canarygrass, reed	2-3	2
Cattail	3-5	2
Clover; red, white	3-5	2
Cogongrass	3-5	2
Dallisgrass	3-5	2
Dandelion	3-5	2
Dock, curly	3-5	2
Dogbane, hemp	4	2
Fescue (except tall)	3-5	2

Fescue, tall	1-3	2
German ivy	2-4	1-2
Guineagrass	3	1
Horsenettle	3-5	2
Horseradish	4	2
Iceplant	2	1.5-2
Jerusalem artichoke	3-5	2
Johnsongrass	2-3	1
Kikuyugrass	2-3	2
Knapweed	4	2
Lantana	--	1-1.25
Lespedeza	3-5	2
Milkweed, common	3	2
Muhly, wirestem	2	2
Mullein, common	3-5	2
Napiergrass	3-5	2
Nightshade, silverleaf	2	2
Nutsedge; purple, yellow	3	1-2
Orchardgrass	2	2
Pampasgrass	3-5	1.5-2
Paragrass	3-5	2
Pepperweed, perennial	4	2
Phragmites*	3-5	1-2
Poison hemlock	2-4	1-2
Quackgrass	2-3	2
Redvine*	2	2
Reed, giant	4-5	2
Ryegrass, perennial	2-3	1
Smartweed, swamp	3-5	2
Spurge, leafy*	--	2
Sweet potato, wild*	--	2
Thistle, artichoke	2-3	1-2
Thistle, Canada	2-3	2
Timothy	2-3	2
Torpedograss*	4-5	2
Trumpetcreeper*	2-3	2
Vaseygrass	3-5	2
Velvetgrass	3-5	2
Wheatgrass, western	2-3	2

*Partial control

Woody Brush and Trees

Apply this product after full leaf expansion, unless otherwise directed. Use the higher rate for larger plants and/or dense areas of growth. On vines, use the higher rate for plants that have reached the woody stage of growth. Best results are obtained when application is made in late summer or fall after fruit formation.

In arid areas, best results are obtained when applications are made in the spring to early summer when brush species are at high moisture content and are flowering.

Ensure thorough coverage when using spray-to-wet treatments using hand-held equipment. When using hand-held equipment for low volume directed-spray spot treatments, apply a 5 to 10 percent solution of this product.

Symptoms may not appear prior to frost or senescence with fall treatments.

Allow 7 or more days after application before tillage, mowing or removal. Repeat treatments may be necessary to control plants regenerating from underground parts or seed. Some autumn colors on

undesirable deciduous species are acceptable provided no major leaf drop has occurred. Reduced performance may result if fall treatments are made following a frost.

Weed Species	Broadcast Rate (QT/A)	Hand-Held Spray-to-Wet % Solution
Alder	3-4	1-1.5
Ash*	2-5	1-2
Aspen, quaking	2-3	1-1.5
Bearclover (Bearmat)*	2-5	1-2
Beech*	2-5	1-2
Birch	2	1
Blackberry	3-4	1-1.5
Blackgum	2-5	1-2
Bracken	2-5	1-2
Broom; French, Scotch	2-5	1.5-2
Buckwheat, California*	2-4	1-2
Cascara*	2-5	1-2
Catsclaw*	--	1-1.5
Ceanothus*	2-5	1-2
Chamise*	2-5	1
Cherry; bitter, black, pin	2-3	1-1.5
Coyote brush	3-4	1.5-2
Deerweed	2-5	1
Dogwood*	2-5	1-2
Elderberry	2	1
Elm*	2-5	1-2
Eucalyptus	--	2
Gorse*	2-5	1-2
Hasardia*	2-4	1-2
Hawthorn	2-3	1-1.5
Hazel	2	1
Hickory*	2-5	1-2
Honeysuckle	3-4	1-1.5
Hornbeam, American*	2-5	1-2
Kudzu	4	2
Locust, black*	2-4	1-2
Madrone resprouts*	--	2
Manzanita*	2-5	1-2
Maple, red	2-4	1-1.5
Maple, sugar	--	1-1.5
Monkey flower*	2-4	1-2
Oak; black, white*	2-4	1-2
Oak, post	3-4	1-1.5
Oak; northern, pin	2-4	1-1.5
Oak, Scrub*	2-4	1-1.5
Oak; southern red	2-3	1-1.5
Peppertree, Brazilian (Florida holly)*	2-5	1-2
Persimmon*	2-5	1-2
Pine	2-5	1-2
Poison ivy	4-5	2
Poison oak	4-5	2
Poplar, yellow*	2-5	1-2
Redbud, eastern	2-5	1-2
Rose, multiflora	2	1
Russian olive*	2-5	1-2
Sage, black	2-4	1

Sage, white*	2-4	1-2
Sage brush, California	2-4	1
Salmonberry	2	1
Saltcedar*	2-5	1-2
Sassafras*	2-5	1-2
Sourwood*	2-5	1-2
Sumac; laurel, poison, smooth, sugarbush, winged*	2-4	1-2
Sweetgum	2-3	1-1.5
Swordfern*	2-5	1-2
Tallowtree, Chinese	--	1
Tan oak resprouts*	--	2
Thimbleberry	2	1
Tobacco, tree*	2-4	1-2
Toyon*	--	2
Trumpetcreeper	2-3	1-1.5
Vine maple*	2-5	1-2
Virginia creeper	2-5	1-2
Waxmyrtle, southern*	2-5	1-2
Willow	3	1
Yerbasenta*	--	2

*Partial control

WARRANTY DISCLAIMER

Cheminova warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, CHEMINOVA MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

INHERENT RISKS OF USE

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Cheminova or the Seller. All such risks shall be assumed by Buyer and User. Buyer and User agree to hold Cheminova and the Seller harmless for any claims related to such factors.

LIMITATION OF REMEDIES

To the extent consistent with applicable law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to one of the following, at Cheminova's election:

(1) Refund of purchase price paid by buyer or user for product bought, or

(2) Replacement of amount of product used.

In no case shall Cheminova be liable for consequential, incidental, or special damages or losses.

The terms of the Warranty Disclaimer above and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Cheminova or the Seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

6/2/09

and responsibilities established by Congress in the preemption provisions of section 408(n)(4) of FFDCA. As such, the Agency has determined that this action will not have a substantial direct effect on States or tribal governments, on the relationship between the national government and the States or tribal governments, or on the distribution of power and responsibilities among the various levels of government or between the Federal Government and Indian tribes. Thus, the Agency has determined that Executive Order 13132, entitled *Federalism* (64 FR 43255, August 10, 1999) and Executive Order 13175, entitled *Consultation and Coordination with Indian Tribal Governments* (65 FR 67249, November 9, 2000) do not apply to this final rule. In addition, this final rule does not impose any enforceable duty or contain any unfunded mandate as described under Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Public Law 104–4).

This action does not involve any technical standards that would require Agency consideration of voluntary consensus standards pursuant to section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, section 12(d) (15 U.S.C. 272 note).

VII. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of this final rule in the Federal Register. This final rule is not a "major rule" as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 180

Environmental protection, Administrative practice and procedure, Agricultural commodities, Pesticides and pests, Reporting and recordkeeping requirements.

Dated: June 12, 2009.

Lois Rossi,

Director, Registration Division, Office of Pesticide Programs.

■ Therefore, 40 CFR chapter I is amended as follows:

PART 180—[AMENDED]

■ 1. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 321(q), 346a and 371.

■ 2. Paragraph (a) of §180.314 is revised to read as follows:

§180.314 Triallate; tolerances for residues.

(a) *General.* Tolerances are established for residues of triallate, S-2,3,4-trichloroallyl diisopropylthiocarbamate and its metabolite 2,3,3-trichloroprop-2-enesulfonic acid (TCPSA) in or on the following food commodity:

Commodity	Parts per million
Bermudagrass, hay	0.3

* * * * *

[FR Doc. E9–14869 Filed 6–23–09; 8:45 am]

BILLING CODE 6560–50–S

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 180

[EPA–HQ–OPP–2009–0007; FRL–8417–5]

Glyphosate; Pesticide Tolerances

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This regulation increases the tolerance for residues of glyphosate in or on cotton, gin byproducts. Cheminova, Inc requested these tolerances under the Federal Food, Drug, and Cosmetic Act (FFDCA).

DATES: This regulation is effective June 24, 2009. Objections and requests for hearings must be received on or before August 24, 2009, and must be filed in accordance with the instructions provided in 40 CFR part 178 (see also Unit I.C. of the SUPPLEMENTARY INFORMATION).

ADDRESSES: EPA has established a docket for this action under docket identification (ID) number EPA–HQ–OPP–2009–0007. All documents in the docket are listed in the docket index available at *http://www.regulations.gov*. Although listed in the index, some information is not publicly available, e.g., Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available in the electronic docket at *http://www.regulations.gov*, or, if only available in hard copy, at the OPP Regulatory Public Docket in Rm. S–4400, One Potomac Yard (South Bldg.), 2777 S. Crystal Dr., Arlington, VA. The Docket Facility is open from 8:30 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. The Docket Facility telephone number is (703) 305–5805.

FOR FURTHER INFORMATION CONTACT: Vickie Walters, Registration Division (7505P), Office of Pesticide Programs, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460–0001; telephone number: (703) 305–5704; e-mail address: *wolters.vickie@epa.gov*.

SUPPLEMENTARY INFORMATION:

I. General Information

A. Does this Action Apply to Me?

You may be potentially affected by this action if you are an agricultural producer, food manufacturer, or pesticide manufacturer. Potentially affected entities may include, but are not limited to those engaged in the following activities:

- Crop production (NAICS code 111).
- Animal production (NAICS code 112).
- Food manufacturing (NAICS code 311).
- Pesticide manufacturing (NAICS code 32532).

This listing is not intended to be exhaustive, but rather to provide a guide for readers regarding entities likely to be affected by this action. Other types of entities not listed in this unit could also be affected. The North American Industrial Classification System (NAICS) codes have been provided to assist you and others in determining whether this action might apply to certain entities. If you have any questions regarding the applicability of this action to a particular entity, consult the person listed under FOR FURTHER INFORMATION CONTACT.

B. How Can I Access Electronic Copies of this Document?

In addition to accessing electronically available documents at *http://www.regulations.gov*, you may access this Federal Register document electronically through the EPA Internet under the "Federal Register" listings at *http://www.epa.gov/fedrgstr*. You may also access a frequently updated electronic version of EPA's tolerance regulations at 40 CFR part 180 through the Government Printing Office's e-CFR cite at *http://www.gpoaccess.gov/ecfr*.

C. Can I File an Objection or Hearing Request?

Under section 408(g) of FFDCA, 21 U.S.C. 346a, any person may file an objection to any aspect of this regulation

and may also request a hearing on those objections. You must file your objection or request a hearing on this regulation in accordance with the instructions provided in 40 CFR part 178. To ensure proper receipt by EPA, you must identify docket ID number EPA–HQ–OPP–2009–0007 in the subject line on the first page of your submission. All requests must be in writing, and must be mailed or delivered to the Hearing Clerk as required by 40 CFR part 178 on or before August 24, 2009.

In addition to filing an objection or hearing request with the Hearing Clerk as described in 40 CFR part 178, please submit a copy of the filing that does not contain any CBI for inclusion in the public docket that is described in ADDRESSES. Information not marked confidential pursuant to 40 CFR part 2 may be disclosed publicly by EPA without prior notice. Submit this copy, identified by docket ID number EPA–HQ–OPP–2009–0007, by one of the following methods:

- *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the on-line instructions for submitting comments.
- *Mail:* Office of Pesticide Programs (OPP) Regulatory Public Docket (7502P), Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460–0001.
- *Delivery:* OPP Regulatory Public Docket (7502P), Environmental Protection Agency, Rm. S–4400, One Potomac Yard (South Bldg.), 2777 S. Crystal Dr., Arlington, VA. Deliveries are only accepted during the Docket Facility's normal hours of operation (8:30 a.m. to 4 p.m., Monday through Friday, excluding legal holidays). Special arrangements should be made for deliveries of boxed information. The Docket Facility telephone number is (703) 305–5805.

II. Petition for Tolerance

In the Federal Register of March 25, 2009 (74 FR 12857) (FRL–8399–4), EPA issued a notice pursuant to section 408(d)(3) of FFDCA, 21 U.S.C. 346a(d)(3), announcing the filing of a pesticide petition (PP 8F7451) by Cheminova, One Park Drive, Research Triangle Park, NC 27707. The petition requested that 40 CFR 180.364 be amended by establishing tolerances for residues of the herbicide glyphosate, *N*-(phosphonomethyl)glycine, resulting from the application of glyphosate, the isoproplyamine salt of glyphosate, the ethanolamine salt of glyphosate, the dimethylamine salt of glyphosate, the ammonium salt of glyphosate, and the potassium salt of glyphosate in or on cotton, gin byproducts at 210 parts per million (ppm). That notice referenced a summary of the petition prepared by Cheminova, Inc, the registrant, which is available to the public in the docket, *http://www.regulations.gov.* Comments were received on the notice of filing. EPA's response to these comments is discussed in Unit IV.C.

Cheminova, Inc has requested a Section 3 registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) for application of glyphosate to glyphosate tolerant cotton including Bayer GHB614 cotton (GlyTol cotton), a genetically modified cotton being commercialized by Bayer Crop Science. As a result, the petitioner has requested that the current tolerance for cotton, gin byproducts be increased to 210 ppm. This petition was filed in conjunction with Cheminova's requested change to its FIFRA registration.

Based upon review of the data supporting the petition, EPA has determined that the proposed tolerance in this petition should remain in 40CFR180.364 (a)(1) which reads: Tolerances are established for residues of the herbicide glyphosate, *N*-(phosphonomethyl)glycine, resulting from the application of glyphosate, the isoproplyamine salt of glyphosate, the ethanolamine salt of glyphosate, the dimethylamine salt of glyphosate, the ammonium salt of glyphosate, and the potassium salt of glyphosate on the following food commodities. The proposed numerical value for the proposed tolerance on cotton, gin byproducts remains 210 ppm.

III. Aggregate Risk Assessment and Determination of Safety

Section 408(b)(2)(A)(i) of FFDCA allows EPA to establish a tolerance (the legal limit for a pesticide chemical residue in or on a food) only if EPA determines that the tolerance is "safe." Section 408(b)(2)(A)(ii) of FFDCA defines "safe" to mean that "there is a reasonable certainty that no harm will result from aggregate exposure to the pesticide chemical residue, including all anticipated dietary exposures and all other exposures for which there is reliable information." This includes exposure through drinking water and in residential settings, but does not include occupational exposure. Section 408(b)(2)(C) of FFDCA requires EPA to give special consideration to exposure of infants and children to the pesticide chemical residue in establishing a tolerance and to "ensure that there is a reasonable certainty that no harm will result to infants and children from aggregate exposure to the pesticide chemical residue...."

Consistent with section 408(b)(2)(D) of FFDCA, and the factors specified in section 408(b)(2)(D) of FFDCA, EPA has reviewed the available scientific data and other relevant information in support of this action. EPA has sufficient data to assess the hazards of and to make a determination on aggregate exposure for the petitioned-for tolerances for residues of glyphosate on cotton, gin by products at 210 ppm. EPA's assessment of exposures and risks associated with establishing tolerances follows.

A. Toxicological Profile

EPA has evaluated the available toxicity data and considered its validity, completeness, and reliability as well as the relationship of the results of the studies to human risk. EPA has also considered available information concerning the variability of the sensitivities of major identifiable subgroups of consumers, including infants and children. Specific information on the studies received and the nature of the adverse effects caused by glyphosate as well as the no-observed-adverse-effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL) from the toxicity studies are discussed in the rule making document referenced in this unit. A summary of the toxicological endpoints and current risk assessments for glyphosate can be found in the same rule making document.

In amending the glyphosate cotton, gin byproducts tolerance, EPA relies on the risk assessment and safety finding made in the final rule published in the Federal Register of December 20, 2006 (71 FR 73586) (FRL–8385–7) which established tolerances for residues of glyphosate in or on noni at 0.20 ppm and various other commodities. For the reasons explained in this unit, increasing the cotton, gin byproducts tolerance to 210 ppm does not change the human exposure and risk to glyphosate as set forth in that 2006 rulemaking. Accordingly, EPA herein adopts the safety findings in that rulemaking.

Increasing the current glyphosate tolerance for cotton, gin byproducts to 210 ppm does not result in changes in the exposure or risk estimates reported in the previous risk assessments for the reasons listed in this unit and discussed in the Agency review entitled Glyphosate Label Amendment to Permit Application of Glyphosate to Bayer's Glyphosate-Tolerant Cotton GHB614., available at *www.regulations.gov* in Docket ID number EPA–HQ–OPP–2009–0007 and identified as EPA–HQ–OPP–2009–0007–0002.

1. Glyphosate is currently registered for application to cotton genetically modified to express the Agrobacterium EPSPS gene. Available information indicate that Bayer GHB614 cotton (GlyTol Cotton) has been genetically modified to produce the 2mEPSPS protein which is not inhibited by glyphosate. The 2mEPSPS gene was generated by introducing mutations into the wild maize gene. The 2mEPSPs protein differs from the wild maize EPSPS protein by two amino acids. Based on the current metabolism data and because tolerance to glyphosate in GHB614 cotton is conferred via modification of an endogenous plant EPSPS gene so that the plant is no longer sensitive (i.e. tolerance is not conveyed via metabolism of the herbicide), the Agency concludes that previous conclusions concerning the residues of concern for tolerance expression and risk assessment are applicable to GHB614 cotton (i.e. the residues of concern for tolerance expression and risk assessment are glyphosate *per se*).

2. The numerical value of all but one feed tolerance will remain the same.

3. The most recent dietary analysis assumed tolerance level residues and 100% crop treated.

4. The estimate of glyphosate levels in drinking water is based on a glyphosate use involving direct application to water at 3.75 pounds active ingredient per acre. The proposed use pattern is the same as the currently registered use pattern on glyphosate tolerant cotton. Use of glyphosate on GlyTol Cotton will not result in higher levels in drinking water.

5. Previously calculated dietary burden to beef and dairy cattle were based on alfalfa hay (400 ppm tolerance) being the significant contributor to the diet. Because cotton, gin byproducts constitute a minor feed commodity (5% of the beef cattle and not feed to dairy cattle), the Agency concludes that the increase in cotton, gin byproducts tolerance to 210 ppm will not significantly affect the magnitude of the residue in livestock. Therefore, no increase in currently established livestock tolerances is necessary.

6. Previously calculated dietary burden to poultry were based on alfalfa meal (400 ppm). The previously calculated dietary burden to hog was based on alfalfa meal and barley grain (20 ppm). The numerical values for these commodities remain unchanged. Cotton, gin byproducts are not feed to poultry and hog. Therefore, the Agency concludes that the increase in the cotton, gin byproducts tolerance to 210 ppm will not significantly affect the magnitude of the residue in poultry or hog, and no increases in tolerance for these commodities are necessary.

Therefore, based on the risk assessments discussed in the notices referenced above, EPA concludes that no harm will result to the general population or to infants and children from aggregate exposure to glyphosate residues.

IV. Other Considerations

A. Analytical Enforcement Methodology

Adequate enforcement methodology (high performance liquid chromatography (HPLC) with fluorometric detection and gas chromatography with mass spectrometry (GC/MS)) are available to enforce the tolerance expression. The methods may be requested from: Chief, Analytical Chemistry Branch, Environmental Science Center, 701 Mapes Rd., Ft. Meade, MD 20755–5350; telephone number: (410) 305–2905; e-mail address: *residuemethods@epo.gov.*

B. International Residue Limits

There are no Codex MRLs for glyphosate on cotton, gin byproducts. MRLs are not set for cotton, gin byproduct, as it is not considered a major item in international trade. No Canadian or Mexican MRLs exist for glyphosate on cotton, gin byproducts.

C. Response to Comments

One comment was received from a private citizen objecting to the establishment of tolerances. The Agency has received similar comments from this commenter on numerous previous occasions. Refer to the Federal Register of March 14, 2007 (72 FR 11784; FRL–8117–2) for the Agency response to these objections.

V. Conclusion

Therefore, tolerances are established for residues of glyphosate, *N*-(phosphonomethyl)glycine, resulting from the application of glyphosate, the isopropylamine salt of glyphosate, the ethanolamine salt of glyphosate, the dimethylamine salt of glyphosate, the ammonium salt of glyphosate, and the potassium salt of glyphosate on cotton, gin byproducts at 210 ppm.

VI. Statutory and Executive Order Reviews

This final rule establishes tolerances under section 408(d) of FFDCA in response to a petition submitted to the Agency. The Office of Management and Budget (OMB) has exempted these types of actions from review under Executive Order 12866, entitled *Regulatory Planning and Review* (58 FR 51735, October 4, 1993). Because this final rule has been exempted from review under Executive Order 12866, this final rule is not subject to Executive Order 13211, entitled *Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use* (66 FR 28355, May 22, 2001) or Executive Order 13045, entitled *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885, April 23, 1997). This final rule does not contain any information collections subject to OMB approval under the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.*, nor does it require any special considerations under Executive Order 12898, entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629, February 16, 1994).

Since tolerances and exemptions that are established on the basis of a petition under section 408(d) of FFDCA, such as the tolerance in this final rule, do not require the issuance of a proposed rule, the requirements of the Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) do not apply.

This final rule directly regulates growers, food processors, food handlers, and food retailers, not States or tribes, nor does this action alter the relationships or distribution of power and responsibilities established by Congress in the preemption provisions of section 408(n)(4) of FFDCA. As such, the Agency has determined that this action will not have a substantial direct effect on States or tribal governments, on the relationship between the national government and the States or tribal governments, or on the distribution of power and responsibilities among the various levels of government or between the Federal Government and Indian tribes. Thus, the Agency has determined that Executive Order 13132, entitled *Federalism* (64 FR 43255, August 10, 1999) and Executive Order 13175, entitled *Consultation and Coordination with Indian Tribal Governments* (65 FR 67249, November 9, 2000) do not apply to this final rule. In addition, this final rule does not impose any enforceable duty or contain any unfunded mandate as described under Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Public Law 104–4).

This action does not involve any technical standards that would require Agency consideration of voluntary consensus standards pursuant to section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, section 12(d) (15 U.S.C. 272 note).

VII. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of this final rule in the Federal Register. This final rule is not a "major rule" as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 180

Environmental protection, Administrative practice and procedure, Agricultural commodities, Pesticides and pests, Reporting and recordkeeping requirements.

Dated: June 11, 2009.

Lois Rossi,

Director, Registration Division, Office of Pesticide Programs.

■ Therefore, 40 CFR chapter I is amended as follows:

PART 180—[AMENDED]

■ 1. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 321(q), 346a and 371.

■ 2. Section 180.364 is amended by revising the following entry in the table in paragraph (a)(1) to read as follows:

§ 180.364 Glyphosate; tolerances for residues.

(a) *General.* (1) * * *

Commodity	Parts per million
* * *	* *
Cotton, gin byproducts	210
* * *	* *

* * * * *

[FR Doc. E9–14594 Filed 6–23–09; 8:45 am]

BILLING CODE 6560–50–S

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 180

[EPA–HQ–OPP–2008–0384; FRL–8417–8]

Acetochlor; Pesticide Tolerances

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This regulation modifies tolerances for residues of acetochlor and its metabolites in or on the commodities corn, field, forage; corn, field, stover; and corn, pop, stover. The modifications are detailed in Unit II. of this document. Monsanto Company requested these tolerances under the Federal Food, Drug, and Cosmetic Act (FFDCA).

DATES: This regulation is effective June 24, 2009. Objections and requests for hearings must be received on or before August 24, 2009, and must be filed in accordance with the instructions provided in 40 CFR part 178 (see also Unit I.C. of the **SUPPLEMENTARY INFORMATION**).

ADDRESSES: EPA has established a docket for this action under docket identification (ID) number EPA–HQ–OPP–2008–0384. All documents in the docket are listed in the docket index available at *http://www.regulations.gov*. Although listed in the index, some information is not publicly available, e.g., Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available in the electronic docket at *http://www.regulations.gov*, or, if only available in hard copy, at the OPP Regulatory Public Docket in Rm. S–4400, One Potomac Yard (South Bldg.), 2777 S. Crystal Dr., Arlington, VA. The Docket Facility is open from 8:30 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. The Docket Facility telephone number is (703) 305–5805.

FOR FURTHER INFORMATION CONTACT: Vickie Walters, Registration Division (7505P), Office of Pesticide Programs, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460–0001; telephone number: (703) 305–5704; e-mail address: *walters.vickie@epa.gov*.

SUPPLEMENTARY INFORMATION:

I. General Information

A. Does this Action Apply to Me?

You may be potentially affected by this action if you are an agricultural producer, food manufacturer, or pesticide manufacturer. Potentially affected entities may include, but are not limited to those engaged in the following activities:

- Crop production (NAICS code 111).
- Animal production (NAICS code 112).
- Food manufacturing (NAICS code 311).
- Pesticide manufacturing (NAICS code 32532).

This listing is not intended to be exhaustive, but rather to provide a guide for readers regarding entities likely to be affected by this action. Other types of entities not listed in this unit could also be affected. The North American Industrial Classification System (NAICS) codes have been provided to assist you and others in determining whether this action might apply to certain entities. If you have any questions regarding the applicability of this action to a particular entity, consult the person listed under **FOR FURTHER INFORMATION CONTACT**.

B. How Can I Access Electronic Copies of this Document?

In addition to accessing electronically available documents at *http://www.regulations.gov*, you may access this Federal Register document electronically through the EPA Internet under the "Federal Register" listings at *http://www.epa.gov/fedrgstr*. You may also access a frequently updated electronic version of EPA's tolerance regulations at 40 CFR part 180 through the Government Printing Office's e-CFR site at *http://www.gpoaccess.gov/ecfr*.

C. Can I File on Objection or Hearing Request?

Under section 408(g) of FFDCA, 21 U.S.C. 346a, any person may file an objection to any aspect of this regulation and may also request a hearing on those objections. You must file your objection or request a hearing on this regulation in accordance with the instructions provided in 40 CFR part 178. To ensure proper receipt by EPA, you must identify docket ID number EPA–HQ–OPP–2008–0384 in the subject line on the first page of your submission. All requests must be in writing, and must be mailed or delivered to the Hearing Clerk as required by 40 CFR part 178 on or before August 24, 2009.

In addition to filing an objection or hearing request with the Hearing Clerk as described in 40 CFR part 178, please submit a copy of the filing that does not contain any CBI for inclusion in the public docket that is described in **ADDRESSES**. Information not marked confidential pursuant to 40 CFR part 2 may be disclosed publicly by EPA without prior notice. Submit this copy, identified by docket ID number EPA–HQ–OPP–2008–0384 by one of the following methods:

- *Federal eRulemaking Portal: http://www.regulations.gov*. Follow the on-line instructions for submitting comments.

Note for Records

Name and Registration No.:

Glyfos X-Tra Herbicide
EPA Registration No. 4787-23

Glyfos Herbicide
EPA Registration No. 4787-31

Cheminova submitted applications for use of glyphosate on Bayer Glyphosate Tolerant Cotton (GHB614) (GlyTol) cotton. Residue data from Bayer were submitted. Companies believed currently established tolerances for glyphosate would be adequate to support proposed use pattern.

Seed must be cleared by USDA prior to registration of use pattern.

Labels and residue data routed to HED/RAB1.

HED/RAB1 review dated September 2, 2008 stated a petition was required proposing a tolerance for residues of glyphosate on cotton, gin byproducts at 210 ppm.

Cheminova was notified that petition proposing required tolerance must be submitted.

Petition No. 8F7451 was submitted October 8, 2008. Since Agency only had to prepare NOF and final rule, petition not routed at this time, due to length of time expected for clearance of GHB614 cotton seed by USDA. Agency policy not to establish tolerances on genetically altered seed until clearance of seed by USDA.

Emails between EPA and USDA in Feb-April 2009 indicated that Bayer cotton GBH614 seed was nearing clearance.

Final rule drafted and routed to HED and OGC for comments. Comments included and draft sent to FR for type setting.

Submitted labels reviewed by PM reviewer 5/4/09-found several deficiencies. Called Cheminova contact Jennifer DeCarlo on 5/6/09 and requested replacement labels.

Seed cleared by USDA/APIS 5/22/09

Final rule sent forward for signature.

Replacement labels received by email 6/2/09, Labels are acceptable with minor changes.
Register Use once tolerance publishes
Vicki K Walters 6/11/09

Glyfos X-tra Revised Label
Jennifer DeCarlo to: Vickie Walters 06/02/2009 11:19 AM

Hi Vicky,

Attached is a revised label for Glyfos X-TRA, EPA Reg. No. 4787-23. This label was revised to remove all of the instances where "recommendations" appeared and revise the REI and Storage and Disposal statements.

The revised label for Glyfos Herbicide will follow shortly.

Best regards,
Jennifer

Jennifer L. DeCarlo
Registration Manager
Cheminova, Inc.
1600 Wilson Blvd., Suite 700
Arlington, VA 22209
Phone: 201-483-6110
Fax: 201-483-6109
Cell: 973-356-5557

E-mail: jennifer.decarlo@cheminova.com GLYFOS XTRA glyphosate tolerant-revised per EPA-6-2-09-CLEAN COPY.doc

From: Jim Tompkins/DC/USEPA/US
To: Vickie Walters/DC/USEPA/US@EPA, Dan Kenny/DC/USEPA/US@EPA

Date: Thursday, May 21, 2009 01:05PM
Subject: Fw: Clearance BAYER GHB614 GlyTol Cotton

---- Forwarded by Jim Tompkins/DC/USEPA/US on 05/21/2009 01:05 PM -----

From: Susan.M.Koehler@aphis.usda.gov
To: Jim Tompkins/DC/USEPA/US@EPA
Cc: Michael.T.Watson@aphis.usda.gov, Sidney.W.Abel@aphis.usda.gov
Date: 05/21/2009 11:20 AM
Subject: Re: Clearance BAYER GHB614 GlyTol Cotton

I wasn't sure if you were aware of this recent action since I have been out of the office for a funeral and several folks are on a road trip to Raleigh.

APHIS announced today that Glytol Cotton has been deregulated and it scheduled to be published in the May 22 FR notice and will be effective then.

See the press release at http://www.aphis.usda.gov/newsroom/content/2009/05/cottonge.shtmi

Susan M. Koehler, Ph.D.
Branch Chief/Supervisory Biotechnologist
Plant Branch
USDA/APHIS/BRS
4700 River Road, Unit 147
Riverdale, MD 20737
Tel: 301-734-4886
FAX: 301-734-8669
susan.m.koehler@aphis.usda.gov

Tompkins.Jim@epamail.epa.gov

04/28/2009 06:42 AM

To Susan.M.Koehler@aphis.usda.gov
cc
Subject Re: Clearance BAYER GHB614 GlyTol Cotton

Has Bayer GHB614 GlyTol Cotton been deregulated? The Company keeps

asking us to register the use of glyphosate on this seed which I can not do until you have deregulated the seed.

Jim Tompkins
Team Leader 25
Herbicide Branch
Registration Division

Phone 703 305 5697
Fax 703 308 0029
E-mail Tompkins.jim@EPA.GOV

From:
Susan.M.Koehler@aphis.usda.gov

To: Jim
Tompkins/DC/USEPA/US@EPA

Cc: Sidney.W.Abel@aphis.usda.gov,
Michael.T.Watson@aphis.usda.gov

Date: 12/15/2008 06:19
PM

Subject: Re: Clearance BAYER GHB614 GlyTol
Cotton

The Glytol cotton petition is in the final stage of review and should be finished soon. We will gladly let you know when we have completed and have sent to the FR for publication. The GAT corn petition and EA is out for public comment with comments due on Feb 6, so I would image it would not be deregulated before March. Again, we can let you know when we have completed it and have sent it to the FR for publication. The petitions and relevant EAs and FR notices are found at http://www.aphis.usda.gov/brs/not_reg.html .

Susan Koehler, Ph.D.
Branch Chief, Plants Branch
Environmental Risk Analysis Division

Biotechnology Regulatory Services
USDA, Animal and Plant Health Inspection Service
(301) 734-4886

Tompkins.Jim@epamail.epa.gov

12/15/2008 09:17 AM

To
Susan.M.Koehler@aphis.usda.gov
cc

Subject
Re: Clearance BAYER GHB614 GlyTol Cotton

For purposes of planning on EPA's part, can you give me an estimate of the time frame for deregulation of Bayer GHB614 GlyTol Cotton seed and Dupot's GAT corn seed?

Jim Tompkins
Team Leader 25
Herbicide Branch
Registration Division

Phone 703 305 5697
Fax 703 308 0029
E-mail Tompkins.jim@EPA.GOV

Newsroom

News Release

Printable version

Cindy Ragin (301) 734-3285
Suzanne Bond (301) 734-5175

USDA DEREGULATES GENETICALLY ENGINEERED COTTON

WASHINGTON, May 21, 2009--The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) today announced that after a thorough review of scientific evidence it will deregulate the genetically engineered (GE) cotton line GHB614. The cotton and its progeny can now be moved freely and planted without the requirement of permits or other regulatory oversight by APHIS.

APHIS deregulated the cotton after concluding that it does not present a plant pest risk. APHIS' determination was based on an analysis of scientific data, comments received from the public and an environmental assessment (EA) and a pest risk assessment.

Bayer CropScience (BCS) submitted a petition to APHIS to deregulate the GHB614 cotton, which is genetically engineered for tolerance to the herbicide glyphosate. APHIS published a notice in the *Federal Register* seeking public comment on BCS' petition and a draft EA on June 18, 2008. The public comment period closed Aug. 18, 2008.

APHIS regulates GE products in cooperation with the Environmental Protection Agency (EPA) and the U.S. Department of Health and Human Services' Food and Drug Administration (FDA). In addition to APHIS review, BCS has submitted the appropriate documents to both EPA and FDA to address the requirements specific to each agency. EPA requires that all pesticides, including herbicides, be registered prior to distribution or sale, unless exempt from EPA regulation. Residue tolerances for pesticides are also established by EPA, and FDA enforces those tolerances. FDA provides a consultation process to ensure that any human and animal feed safety issues are resolved prior to commercial distribution of a GE food.

APHIS is responsible for protecting U.S. agriculture and the environment from animal and plant pests and has overseen the deregulation of 75 GE products.

This notice is scheduled to be published in the May 22 *Federal Register* and becomes effective upon publication.

#

Note to Reporters: USDA news releases, program announcements and media advisories are available on the Internet. Go to the APHIS news release page at http://www.aphis.usda.gov/newsroom. Also, anyone with an e-mail address can sign up to receive APHIS press releases automatically. Send an e-mail message to

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lyris@mdrdlyriss10.aphis.usda.gov and leave the subject blank.
In the message, type
subscribe press releases.

C | 4 | 7 | 8 | 7 | | | | | 2 | 3 | | | 01/31/08

1. IS A PUBLIC PETITION NECESSARY? ☐ YES ☐ NO	4. PETITION NO.	5. RECEIVED ON (MO / DAY)
6. METHOD OF SUPPORT ☐ 2A ☐ 2B ☐ 2C	7. PRODUCT MANAGER 8F7451	NO. / 8. PROJECTED RETURN (MO / DAY)
DATE FILED 5/4/09 / 10. DATE PUBLISHED AWP	11. ACTION TYPE Label for Gly Tol Cotton	CODE / 12. OUTGOING DATE (MO / DAY)

	REVIEW TYPE	REVIEWER CODE (INITIALS)	SIGNATURE OF REVIEWER	COMMENT CODE	DATE REVIEW COMPLETED MO	DAY
A	REVIEWABILITY TEAM					
B	PRODUCT MANAGER TEAM EFFICACY REVIEW					
C	PRODUCT MANAGER TEAM HUMAN SAFETY REVIEW					
D	PRODUCT MANAGER TEAM ENVIRONMENTAL SAFETY REVIEW					
E	PRODUCT MANAGER TEAM REGISTRATION REVIEW					
F	PRODUCT MANAGER		VKW	blj	05	04/09
G	INTERAGENCY REFERRAL		RGI not correct, other			
H	COST-BENEFIT REVIEW		changes			
I	PUBLIC COMMENTS REVIEW					
J	EEB BRANCH INSECTICIDE EFFICACY					
K	EEB BRANCH HERBICIDE EFFICACY					
L	EEB BRANCH FUNGICIDE EFFICACY					
M	EEB BRANCH RODENTICIDE EFFICACY					
N	EEB BRANCH DISINFECTANT EFFICACY					
O	CHEMISTRY BRANCH RESIDUE CHEMISTRY					
P	EEB BRANCH ENVIRONMENTAL CHEMISTRY					
Q	TOXICOLOGY BRANCH HUMAN SAFETY					
R	EEB BRANCH ENVIRONMENTAL SAFETY					
S						
T						

PRODUCT MANAGER SIGNATURE	TYPE OF RESPONSE	

EPA Form 8570-1 (5-78)

Glyfos® X-TRA Herbicide

Avoid contact of herbicide with foliage, green stems, exposed non-woody roots or fruit of crops (except as specified for individual glyphosate tolerant crops), desirable plants and trees, because severe injury or destruction may result.

Herbicide for glyphosate tolerant crops.

Selective broad-spectrum weed control in glyphosate tolerant crops. Non-selective, broad-spectrum weed control for many cropping systems, farmsteads and Conservation Reserve Program acres.

Not all products recommended on this label are registered for use in California. Check the registration status of each product in California before using.

[Optional marketing text: For Big Jobs and Tough Weeds
Even Kills the Root! Glyphosate Plus Surfactant]

THIS IS AN END-USE PRODUCT. CHEMINOVA DOES NOT INTEND AND HAS NOT REGISTERED IT FOR REFORMULATION. SEE INDIVIDUAL CONTAINER LABEL FOR REPACKAGING LIMITATIONS.

Refillable Container Label Statement:

THIS IS AN END-USE PRODUCT. CHEMINOVA DOES NOT INTEND AND HAS NOT REGISTERED IT FOR REFORMULATION. IT IS INTENDED THAT REPACKAGING BE ONLY IN ACCORDANCE WITH A CHEMINOVA REPACKAGING OR TOLL REPACKAGING AGREEMENT.

Non-Refillable Container Label Statement:

THIS IS AN END-USE PRODUCT. CHEMINOVA DOES NOT INTEND AND HAS NOT REGISTERED IT FOR REFORMULATION OR REPACKAGING.

ACTIVE INGREDIENT:	
*Glyphosate (N-(phosphonomethyl) glycine) in the form of its isopropylamine salt	**41.0%**
INERT INGREDIENTS:	**59.0%**
TOTAL:	**100%**

* Contains 480 grams per liter or 4 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its isopropylamine salt. Equivalent to 356 grams per liter or 3 pounds per U.S. gallon of the acid, glyphosate.

KEEP OUT OF REACH OF CHILDREN

WARNING AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

IN CASE OF A MEDICAL EMERGENCY INVOLVING THIS PRODUCT, CALL TOLL FREE, DAY OR NIGHT 1-866-303-6950

Read the entire label before using this product.
Use only according to label instructions.

7, REI = 12 hrs
8 sp2 Dis
4, 9, 10, 11, 12, 13, 14, 15, 16, 30, 32, 39, 40, 42, 44, 45, 47, 51, 53, 58, 65, 66, 68, 69, 70, 71, 72, 74, 78, 79, 80,
recommended, etc

RECEIVED 1/31/08

Read "DISCLAIMER" before buying or using.
If terms are not acceptable, return product unopened without delay.

SEE BOOKLET FOR ADDITIONAL PRECAUTIONARY STATEMENTS AND USE DIRECTIONS

EPA Reg. No. 4787-23 EPA Est. No. 39578-TX-1

NET CONTENTS:

Manufactured for:
Cheminova A/S
P.O. Box 9
Lemvig, Denmark

Authorized Representative
Cheminova, Inc.
1700 Route 23
Wayne, NJ 07470
www.cheminova.us.com

® Glyfos is a registered trademark of Cheminova

PRODUCT OF DENMARK

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Woody Brush and Trees

DISCLAIMER

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
KEEP OUT OF REACH OF CHILDREN
WARNING! AVISO!

Causes substantial but temporary eye injury. Harmful if inhaled or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before re-use.

FIRST AID

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a Poison Control Center or doctor for treatment advice.
IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a Poison Control Center or doctor for treatment advice.
IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a Poison Control Center or doctor for further treatment advice.
IF SWALLOWED: Call a Poison Control Center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a Poison Control Center or doctor. Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a Poison Control Center or doctor, or when going for treatment. You may also contact 1-866-303-6950 for emergency medical treatment information.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear: long sleeved shirt and long pants, shoes plus socks and protective eyewear. Follow manufacturer's instructions for cleaning / maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Wash thoroughly and put on clean clothing.

Domestic Animals: This product is considered to be relatively non-toxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

PHYSICAL OR CHEMICAL HAZARDS

Spray solutions of this product should be mixed, stored and applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined steel containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce

hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulations.

Agricultural Use Requirements

Use this product only in accordance with its labeling and the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

12 hrs

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water, is: coveralls, chemical resistant gloves such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber, shoes plus socks.

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep people and pets off treated areas until spray solution has dried.

FOR MORE INFORMATION, CALL TOLL-FREE
1-800-548-6113

STORAGE AND DISPOSAL

PESTICIDE STORAGE: Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, State or local procedures.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is destroyed.

PR Notice 2007-4

CONTAINER DISPOSAL
BULK AND MINIBULK
When the container is empty, replace the cap and seal all openings that have been opened during use, and return the container to the point of purchase, or to an alternate location designated by the registrant at the time of purchase of this product. If not returned to the point of purchase or to a designated location, triple rinse or pressure rinse the empty container and offer for recycling if available.

Instructions for Users and Refillers
The container must only be refilled with this pesticide product. **Do Not Reuse the Container For Any Other Purpose.** Do not transport if this container is damaged, leaking or obsolete. To obtain information about recycling refillable containers, contact Cheminova at 1-800-548-6113. Cleaning is not necessary prior to refilling with the same product. Clean container before final disposal. Disposal of this container must be in compliance with state and local regulations.

Instructions for Refillers
Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transporting. If the container can not be refilled, triple rinse or pressure rinse the empty container and offer for recycling if available.

FOR ALL OTHER NON-RETURNABLE / REFILLABLE CONTAINERS
Do not reuse container. Triple rinse container, then puncture and dispose of in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

GENERAL INFORMATION

Product Description
This product is a postemergence, systemic herbicide with no soil residue activity. It is generally non-selective and gives broad spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid. It may be applied through most standard industrial or field-type sprayers after dilution and thorough mixing with water or other carriers according to label instructions.

Ammonium sulfate, drift control additives or dyes and colorants may be used. See the **MIXING** section of this label for instructions.

Time to Symptoms
This product moves through the plant from the point of foliage contact to and into the root system. Visible effects on most annual weeds occur within 2 to 4 days, but on most perennial weeds may not occur for 7 days or more. Extremely cool or cloudy weather following treatment may slow activity of this product and delay development of visual symptoms. Visible effects are a gradual wilting and yellowing of the plant which advances to complete browning of above-ground growth and deterioration of underground plant parts.

Stage of Weeds
Annual weeds are easiest to control when they are small. Best control of most perennial weeds is obtained when treatment is made at late growth stages approaching maturity. Refer to the **ANNUAL WEEDS, PERENNIAL WEEDS** and **WOODY BRUSH AND TREES RATE TABLES** for recommendations for specific weeds.

Always use the higher rate of this product per acre within the recommended range when weed growth is heavy or dense or weeds are growing in an undisturbed (non-cultivated) area.

Do not treat weeds under poor growing conditions such as drought stress, disease or insect damage, as reduced weed control may result. Reduced results may also occur when treating weeds heavily covered with dust.

Cultural Considerations
Reduced control may result when applications are made to annual or perennial weeds that have been mowed, grazed, or cut, and have not been allowed to regrow to the recommended stage for treatment.

Rainfastness
Heavy rainfall soon after application may wash this product off of the foliage and a repeat application may be required for adequate control.

Spray Coverage
For best results, spray coverage should be uniform and complete. Do not spray weed foliage to the point of runoff.

Mode of Action
The active ingredient in this product inhibits an enzyme found only in plants and microorganisms that is essential to formation of specific amino acids.

No Soil Activity
Weeds must be emerged at the time of application to be controlled by this product. Weeds germinating from seed after application will not be controlled. Unemerged plants arising from unattached underground rhizomes or root stocks of perennials will not be affected by the herbicide and will continue to grow.

Biological Degradation
Degradation of this product is primarily a biological process carried out by soil microbes.

Tank Mixing
This product does not provide residual weed control. For subsequent residual weed control, follow a label-approved herbicide program. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used. Use according to the most restrictive label directions for each product in the mixture.

Buyer and all users are responsible for all loss or damage in connection with the use or handling of mixtures of this product with herbicides or other materials that are not expressly recommended in this labeling. Mixing this product with herbicides or other materials not recommended on this label may result in reduced performance.

Annual Maximum Use Rate
Except as otherwise specified in a crop section of this label, the combined total of all treatments must not exceed 8 quarts of this product per acre per year. For application in non-crop sites or in tree, vine, or shrub crops, the combined total of all treatments must not exceed 10.6 quarts of this product per acre per year. The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredient, whether applied as mixtures or separately. Calculate the application rates and ensure that the total use of this and other glyphosate or sulfosate containing products does not exceed state maximum use rate.

NOTE: Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences.

MIXING

Clean sprayer parts immediately after using this product by thoroughly flushing with water.

NOTE: REDUCED RESULTS MAY OCCUR IF WATER CONTAINING SOIL IS USED, SUCH AS VISIBLY MUDDY WATER OR WATER FROM PONDS AND DITCHES THAT IS NOT CLEAR.

Mixing with Water

This product mixes readily with water. Mix spray solutions of this product as follows: Fill the mixing or spray tank with the required amount of water. Add the recommended amount of this product near the end of the filling process and mix well. Use caution to avoid siphoning back into the carrier source. Use approved anti-back-siphoning devices where required by state or local regulations. During mixing and application, foaming of the spray solution may occur. To prevent or minimize foam, avoid the use of mechanical agitators, terminate by-pass and return lines at the bottom of the tank and, if needed, use an approved anti-foam or defoaming agent.

Tank Mixing Procedure

Always predetermine the compatibility of labeled tank mixtures of this product with water carrier by mixing small proportional quantities in advance.

Mix labeled tank mixtures of this product with water as follows:

1. Place a 20- to 35-mesh screen or wetting basket over filling port.
2. Through the screen, fill the spray tank one-half full with water and start agitation.
3. If ammonium sulfate is used, add it slowly through the screen into the tank. Continue agitation. Ensure that dry ammonium sulfate is completely dissolved in the spray tank before adding other products.
4. If a wettable powder is used, make a slurry with the water carrier, and add it SLOWLY through the screen into the tank. Continue agitation.
5. If a flowable formulation is used, premix one part flowable with one part water. Add diluted mixture SLOWLY through the screen into the tank. Continue agitation.
6. If an emulsifiable concentrate formulation is used, premix one part emulsifiable concentrate with two parts water. Add diluted mixture slowly through the screen into the tank. Continue agitation.
7. Continue filling the spray tank with water and add the required amount of this product near the end of the filling process.
8. Add individual formulations to the spray tank as follows: wettable powder, flowable, emulsifiable concentrate, drift control additive, water soluble liquid.

Maintain good agitation at all times until the contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed. Keep by-pass line on or near the bottom of the tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh.

Refer to the TANK MIXING section of GENERAL INFORMATION for additional precautions.

Mixing for Hand-Held Sprayers

Prepare the desired volume of spray solution by mixing the amount of this product in water as shown in the following table:

Spray Solution

Desired Volume	Amount of Glyfos X-TRA					
	1/2 %	1 %	1 1/2 %	2 %	5 %	10 %
1 Gallon	2/3 oz.	1-1/3 oz.	2 oz.	2-2/3 oz.	6-1/2 oz.	13 oz.
25 Gallon	1 pt.	1 qt.	1-1/2 qt.	2 qt.	5 qt.	10 qt.
100 Gallon	2 qt.	1 gal.	1-1/2 gal.	2 gal.	5 gal.	10 gal.
2 tablespoons = 1 fluid ounce						

For use in knapsack sprayers, it is suggested that the recommended amount of this product be mixed with water in a large container. Fill sprayer with the mixed solution.

Ammonium Sulfate
The addition of 1 to 2 percent dry ammonium sulfate by weight or 8.5 to 17 pounds per 100 gallons of water may increase the performance of this product, particularly under hard water conditions, drought conditions or when tank mixed with certain residual herbicides on annual and perennial weeds. The equivalent rate of ammonium sulfate in a liquid formulation may also be used. Ensure that dry ammonium sulfate is completely dissolved in the spray tank before adding herbicides. Thoroughly rinse the spray system with clean water after use to reduce corrosion.

NOTE: When using ammonium sulfate, apply this product at rates recommended in this label. Lower rates will result in reduced performance.

Colorants or Dyes
Agriculturally-approved colorants or marking dyes may be added to this product. Colorants or dyes used in spray solutions of this product may reduce performance, especially at lower rates or dilutions. Use colorants or dyes according to the manufacturer's recommendations.

Drift Control Additives
Drift control additives may be used with all equipment types, except wiper applicators, sponge bars and Controlled Droplet Applicator (CDA) equipment. When a drift control additive is used, read and carefully observe cautionary statements and all other information appearing on the additive label. The use of drift control additives can affect spray coverage which may result in reduced performance.

APPLICATION EQUIPMENT AND TECHNIQUES

Do not apply this product through any type of irrigation system. This product may be applied with the following application equipment:

Aerial - Fixed Wing and Helicopter

Ground Broadcast Spray - Boom or boomless systems, pull-type sprayer, floaters, pick-up sprayers, spray coupes and other ground broadcast equipment.

Hand-Held and High-Volume Spray Equipment - Knapsack and backpack sprayers, pump-up pressure sprayers, handguns, handwands, mistblowers*, lances and other hand-held and motorized spray equipment used to direct spray onto weed foliage.

* THIS PRODUCT IS NOT REGISTERED IN CALIFORNIA OR ARIZONA FOR USE IN MISTBLOWERS.

Selective Equipment - Recirculating sprayers, shielded and hooded sprayers, wiper applicators and sponge bars.

Injection Systems - Aerial or ground injection sprayers.

Controlled Droplet Applicators (CDA) - Hand-held or boom-mounted applicators that produce a spray consisting of a narrow range of droplet sizes.

APPLY THESE SPRAY SOLUTIONS IN PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING DESIRED VOLUMES.

Aerial Equipment
DO NOT APPLY THIS PRODUCT USING AERIAL SPRAY EQUIPMENT EXCEPT UNDER CONDITIONS AS SPECIFIED WITHIN THIS LABEL.

Use the recommended rates of this herbicide in 3 to 15 gallons of water per acre unless otherwise

specified on this label. Unless otherwise specified, do not exceed 1 quart per acre. Refer to the individual use area sections of this label for recommended volumes, application rates and further instructions.

For aerial application in California and Fresno County California, refer to the **FOR AERIAL APPLICATION IN CALIFORNIA ONLY** and **FOR AERIAL APPLICATION IN FRESNO COUNTY CALIFORNIA ONLY** sections of this label for specific instructions, restrictions and requirements.

THIS **PRODUCT PLUS** dicamba TANK MIXTURES MAY NOT BE APPLIED BY AIR IN CALIFORNIA.

Ensure uniform application - To avoid streaked, uneven or overlapped application, use appropriate marking devices.

AERIAL SPRAY DRIFT MANAGEMENT

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outer most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.

2. Nozzles must always point backward, parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they should be observed.

Importance of Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see **Wind, Temperature and Humidity**, and **Temperature Inversions** sections of this label).

Controlling Droplet Size

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released backwards, parallel to the airstream, will produce larger droplets than other orientations. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce larger droplets than other nozzle types.
- **Boom Length** - For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.
- **Application Height** - Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting

the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller droplets, etc.).

Wind
Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. **NOTE:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

Temperature and Humidity
When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions
Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that move upwards and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas
The product should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Avoid direct application to any body of water.

Aircraft Maintenance
Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove residues of this product accumulated during spraying or from spills. PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. LANDING GEAR IS MOST SUSCEPTIBLE. The maintenance of an organic coating (paint), which meets aerospace specification MIL-C-38413, may prevent corrosion.

FOR AERIAL APPLICATION IN CALIFORNIA ONLY
Aerial applications of this product are allowed in the following situations:

1. In fallow and reduced tillage systems prior to the emergence or transplanting of labeled crops.

2. In alfalfa and pasture renovation applications.

3. Over-the-top applications in glyphosate tolerant corn and cotton. Refer to further label instructions for glyphosate tolerant corn and glyphosate tolerant cotton for specific application instructions for over-the-top applications in these crops.

4. Preharvest in alfalfa, corn, cotton, wheat, glyphosate tolerant corn and glyphosate tolerant cotton. Refer to the **Glyfos X-TRA** further label instructions for glyphosate tolerant corn and glyphosate tolerant cotton and for specific preharvest application instructions for each individual crop.

Do not plant subsequent crops other than those listed in this label for 30 days following application.

When applied as recommended, under the conditions described, this product controls annual and

perennial weeds listed in this label.

When tank mixing this product with 2,4-D for aerial applications, only 2,4-D amine formulations may be used. This tank mixture may be used for fallow and reduced tillage systems and alfalfa and pasture renovation applications only.

DO NOT EXCEED THE FOLLOWING MAXIMUM RATES WHEN MAKING APPLICATIONS BY AIR:

1 quart per acre	2 quarts per acre
	Alfalfa
Corn	
glyphosate ready Corn	
	Cotton
	Glyphosate ready Colton
	Fallow
	Reduced tillage systems
	Pastures
Wheat	

Aerial Equipment sprayed
Use the recommended rates of this product in 3 to 15 gallons of water per acre. Do not apply to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters.

AVOID DRIFT - DO NOT APPLY WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITIONS WHICH FAVOR DRIFT. DRIFT MAY CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH TREATMENT IS NOT INTENDED. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Use the following guidelines when aerial applications are made near crops or desirable perennial vegetation after bud break and before total leaf drop, and/or near other desirable vegetation or annual crops.

1. Do not apply within 100 feet of all desirable vegetation or crop(s).

2. If wind up to 5 miles per hour is blowing toward desirable vegetation or crop(s), do not apply within 500 feet of the desirable vegetation or crop(s).

3. Winds blowing from 5 to 10 miles per hour toward desirable vegetation or crop(s) may require buffer zones in excess of 500 feet.

4. Do not apply when winds are in excess of 10 miles per hour or when inversion conditions exist.

Coarse sprays are less likely to drift; therefore, do not use nozzles or nozzle configurations that dispense spray as fine spray droplets. Do not angle nozzles forward into the air-stream and do not increase spray volume by increasing nozzle pressure. Drift control additives may be used. When a drift control additive is used, read and carefully observe the cautionary statements and all other information appearing on the additive label.

Ensure uniform application - To avoid streaked, uneven or overlapped application, use appropriate marking devices. Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove residues of this product accumulated during spraying or from spills. PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. LANDING GEAR IS MOST SUSCEPTIBLE. The maintenance of an organic coating (paint) which meets aerospace specification MIL-C-38413 may prevent corrosion.

FOR AERIAL APPLICATION IN FRESNO COUNTY, CALIFORNIA ONLY
From February 15 through March 31 Only

Applicable Area

This supplement only applies to the area contained inside the following boundaries within Fresno County, California.

North: Fresno County line
South: Fresno County line
East: State Highway 99
West: Fresno County line

General Information

Always read and follow the label direction and precautionary statements for all products used in the aerial application.

Observe the following directions to minimize off-site movement during aerial application of this product. Minimization of off-site movement is the responsibility of the grower, Pest Control Advisor and aerial applicator.

Written Recommendations

A written recommendation MUST be submitted by or on behalf of the applicator to the Fresno county Agricultural Commissioner 24 hours prior to the application. This written recommendation MUST state the proximity of surrounding crops, and that conditions of each manufacturer's product label and this label have been satisfied.

Aerial Applicator Training and Equipment

Aerial application of this product is limited to pilots who have successfully completed a Fresno County Agricultural Commissioner and California Department of Pesticide Regulation approved training program for aerial application of herbicides. All aircraft must be inspected, critiqued in flight and certified at a Fresno County Agricultural Commissioner approved fly-in. Test and calibrate spray equipment at intervals sufficient to insure that proper rates of herbicides and adjuvants are being applied during commercial use. Applicator must document such calibrations and testing. Demonstration of performance at Fresno County Agricultural Commissioner approved fly-ins constitutes such documentation, or other written records showing calculations and measurements of flight and spray parameters acceptable to the Fresno County Agricultural Commissioner.

Applications at Night – Do not apply this product by air earlier than 30 minutes prior to sunrise and/or later than 30 minutes after sunset without prior permission from the Fresno County Agricultural Commissioner.

Note: For aerial application from April 1 through February 14, refer to the **FOR AERIAL APPLICATION IN CALIFORNIA ONLY** section of this label.

Ground Broadcast Equipment

Use the recommended rates of this product in 3 to 40 gallons of water per acre as a broadcast spray unless otherwise specified. As density of weeds increases, spray volume should be increased within the recommended range to ensure complete coverage. Carefully select proper nozzles to avoid spraying a fine mist. For best results with ground application equipment, use flat spray nozzles. Check for even distribution of spray droplets.

Hand-Held or High-Volume Equipment

Apply to foliage of vegetation to be controlled. For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff. Use coarse sprays only. For recommended rates and timing, refer to the **ANNUAL WEEDS—HAND-HELD OR HIGH-VOLUME EQUIPMENT** section of this product label.

Selective Equipment
This product may be applied through recirculating spray systems, shielded applicators, hooded sprayers, wiper applicators or sponge bars after dilution and thorough mixing with water to listed weeds growing in any noncrop site specified on this label.

In cropping systems, hooded sprayers, shielded sprayers, and wipers may be used in row middles (in between rows of crop plants) where any dripping or leaking will not contact crop foliage. Such equipment must be capable of preventing all crop contact with herbicide solutions and operated without leakage of spray mists or dripping onto crop. Wipers over-the-top of crops may be used only when specifically recommended in this product's labeling.

AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

Contact of the herbicide solulion with desirable vegetation may result in damage or destruction. Applicators used above desirable vegetation should be adjusted so that the lowest spray stream or wiper contact point is at least 2 inches above the desirable vegetation. Droplets, mist, foam, or splatter of the herbicide solution settling on desirable vegetation may result in discoloration, stunting or destruction.

Applications made above the crops should be made when the weeds are a minimum of 6 inches above the desirable vegetation. Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. This may occur in dense clumps, severe infestations or when height of the weeds varies so that not all weeds are contacted. In these instances, repeat treatments may be necessary.

Recirculating spray system
A recirculating spray system directs the spray solution onto weeds growing above desirable vegetation, while spray solution not intercepted by weeds is collected and returned to the spray tank for reuse.

Shielded and Hooded Applicators
When applied under the conditions described in the following paragraphs for shielded and hooded applications, this product at recommended rates will control those weeds listed in the **ANNUAL WEEDS RATE TABLE** and **PERENNIAL WEEDS RATE TABLE** sections of this label. A hooded sprayer is a type of shielded applicator where the spray pattern is fully enclosed including top, sides, front and back, thereby shielding the crop from the spray solution. Keep shields on these sprayers adjusted to protect desirable vegetation. When applying to crops grown on raised beds, ensure that the hood is designed to completely enclose the spray solution. If necessary, extend the front and rear flaps of the hoods to reach the ground in deep furrows. EXTREME CARE MUST BE EXERCISED TO AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

This equipment must be set up and operated in a manner that avoids bouncing or raising the hoods off the ground in any way. If the hoods are raised, spray particles may escape and come into contact with the crop, causing damage or destruction of the crop. Avoid operation on rough or sloping ground where the spray hoods might be raised off the ground.

Use hoods designed to minimize excessive dripping or run-off down the insides of the hoods. A single, low pressure/low drift flat-fan nozzle with an 80 to 95 degree spray angle positioned at the top center of the hood is recommended. Spray volume should be 20-30 gallons per acre.

These procedures will reduce the potential for crop injury:
- The spray hoods must be operated on the ground or skimming across the ground.
- Leave at least an 8 inch untreated strip over the drill row. For example, if the crop row width is 38 inches, the maximum width of the spray hood should be 30 inches.
- Maximum tractor speed: 5 miles per hour to avoid bouncing of the spray hoods.
- Maximum wind speed: 10 miles per hour.
- Use low-drift nozzles that provide uniform coverage within the treated area.

Crop injury may occur when the foliage of treated weeds comes into direct contact with leaves of the crop. Do not apply this product when the leaves of the crop are growing in direct contact with weeds to

be treated. Droplets, mist, foam or splatter of the herbicide solution may contact the crop and cause discoloration, stunting or destruction.

Wiper Applicators
When applied under the conditions described in the following paragraphs, this product CONTROLS many weeds, including volunteer corn, Texas panicum, common rye, shattercane, sicklepod, spanishneedles and bristly starbur; and SUPPRESSES many weeds including Florida beggarweed, Bermudagrass, hemp dogbane, dogfennel, guineagrass, johnsongrass, milkweed, silverleaf nightshade, redroot pigweed, giant ragweed, smutgrass, sunflower, Canada thistle, milk thistle, vaseygrass, velvetleaf.

Wiper applicators are devices that physically wipe appropriate amounts of this product directly onto the weed.

Equipment must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation. Operate this equipment at ground speeds no greater than 5 mph. Performance may be improved by reducing speed in areas of heavy weed infestations to ensure adequate wiper saturation. Better results may be obtained if 2 applications are made in opposite directions.

Avoid leakage or dripping onto desirable vegetation. Adjust height of applicator to ensure adequate contact with weeds. Keep wiping surfaces clean. Be aware that, on sloping ground, the herbicide solution may migrate, causing dripping on the lower end and drying of the wicks on the upper end of a wiper applicator.

Do not use wiper equipment when weeds are wet.

Mix only the amount of solution to be used during a 1-day period, as reduced activity may result from use of leftover solutions. Clean wiper parts immediately after using this product by thoroughly flushing with water.

Do not add surfactant to the herbicide solution.

For Rope or Sponge Wick Applicators: Mix 1 gallon of this product in 2 gallons of water to prepare a 33% solution. Apply this solution to weeds listed above in this section.

For Panel Applicators: Solutions ranging from 33 to 100% of this product in water may be used in panel wiper applicators.

Injection Systems
This product may be used in aerial or ground injection spray systems. It may be used as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix this product with the concentrate of other products when using injection systems.

CDA Equipment
The rate of this product applied per acre by vehicle-mounted CDA equipment must not be less than the amount recommended in this label when applied by conventional broadcast equipment. For vehicle-mounted CDA equipment, apply 2 to 15 gallons of water per acre.

For the control of annual weeds with hand-held CDA units, apply a 20% solution of this product at a flow rate of 2 fluid ounces per minute and a walking speed of 1.5 mph (1 quart per acre). For the control of perennial weeds, apply a 20 to 40% solution of this product at a flow rate of 2 fluid ounces per minute and a walking speed of 0.75 mph (2 to 4 quarts per acre).

Controlled droplet application equipment produces a spray pattern that is not easily visible. Extreme care must be exercised to avoid spray or drift contacting the foliage or any other green tissue of desirable vegetation, as damage or destruction may result.

ANNUAL AND PERENNIAL CROPS (Alphabetical)
NOTE: THIS SECTION GIVES GENERAL DIRECTIONS THAT APPLY TO ALL LISTED CROPS

GROUPED ALPHABETICALLY BELOW. SEE THE INDIVIDUAL CROP CATEGORIES FOR SPECIFIC INSTRUCTIONS, PREHARVEST INTERVALS, AND ADDITIONAL PRECAUTIONS AND RESTRICTIONS.

See the GLYPHOSATE TOLERANT CROPS section of this label for instructions for treating glyphosate tolerant crops.

TYPES OF APPLICATIONS
Chemical Fallow, Preplant Fallow Beds, Preplant, Preemergence, At-Planting, Hooded Sprayers in Row Middles, Shielded Sprayers in Row Middles, Wiper Applications in Row Middles and Post-Harvest Treatments.

GENERAL USE INSTRUCTIONS
Apply this product during fallow intervals preceding planting, prior to planting or transplanting, at-planting, or preemergent to annual and perennial crops listed in this label, except where specifically limited. For any crop not listed in this label, applications must be made at least 30 days prior to planting. Unless otherwise specified, weed control applications may be made according to the rates listed in the **ANNUAL WEEDS** and **PERENNIAL WEEDS** and **WOODY BRUSH AND TREES RATE TABLES** in this label. Repeat applications may be made up to a maximum of 8 quarts per acre per year.

Post-directed hooded sprayers and wiper equipment capable of preventing all crop contact with herbicide solutions may be used in mulched or unmulched row middles after crop establishment. Where specifically noted below, wipers may also be used above certain crops to control tall weeds. Refer to the **SELECTIVE EQUIPMENT** section of this label for essential precautions when using hooded sprayers or wipers to avoid crop injury caused by leakage of spray mists or dripping onto crops. Crop injury is possible with these applications and shall be the sole responsibility of the applicator.

The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredient, whether applied as mixtures or separately. Calculate the application rates and ensure that the total use of this and other glyphosate or sulfosate containing products does not exceed stated maximum use rate.

GENERAL PRECAUTIONS, RESTRICTIONS
Avoid contact of herbicide with foliage, green shoots or stems, bark, exposed roots (including those emerging from plastic mulch), or fruit of crops because severe injury or destruction may result. When making preemergence and at planting applications, applications must be made before crop emergence to avoid severe crop injury. Broadcast applications made at emergence will result in injury or death to emerged seedlings. Apply before seed germination in coarse sandy soils to further minimize the risk of injury. Unless otherwise specified in this product's labeling, treatments with selective equipment including wipers and hooded sprayers must be made at least 14 days prior to harvest. Post-harvest or fallow applications must be made at least 30 days prior to planting any non-labeled crop. See **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for additional information.

In crops where spot treatments are allowed, do not treat more than 10 % of the total field to be harvested. The crop receiving spray in treated area will be killed. Take care to avoid drift or spray outside the target area for the same reason.

For broadcast postemergent treatments, do not harvest or feed treated vegetation for 8 weeks following application, unless otherwise specified.

Cereal and Grain Crops
LABELED CROPS: Barley, Buckwheat, Millet (pearl, proso), Oats, Rice, Rye, Quinoa, Teff, Teosinte, Triticale, Wheat (all), Wild Rice.

PRECAUTIONS, RESTRICTIONS: Do not treat rice fields or levees when field contains water.

TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following:

Red Rice Control Prior to Planting Rice, Spot Treatment (except rice), Preharvest (Feed Barley and Wheat only), Over-the-Top Wiper Applications (Feed Barley and Wheat only).

Preplant, Preemergence and At-planting
USE INSTRUCTIONS: This product may be applied before, during or after planting of cereal crops. Applications must be made prior to emergence of the crop.

Red rice control prior to planting rice
USE INSTRUCTIONS: Apply 1.5 quarts of this product in 5 to 10 gallons of water per acre. Flush fields prior to application to obtain uniform germination and stand of red rice. Make application when the majority of the red rice plants are in the 2-leaf stage and no more than 4 inches tall. Red rice plants with less than 2 true leaves may be only partially controlled.

PRECAUTIONS, RESTRICTIONS: Avoid spraying during low humidity conditions, as reduced control may result. Do not treat rice fields or levees when the fields contain floodwater. Do not re-flood treated fields for 8 days following application.

Spot Treatment (except rice)
USE INSTRUCTIONS: This product may be applied as a spot treatment in cereal crops. Apply this product before heading in small grains.

PRECAUTIONS, RESTRICTIONS: Do not treat more than 10% of the total field area to be harvested. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Postharvest
USE INSTRUCTIONS: This product may be applied after harvest of cereal crops. Higher rates may be required for control of large weeds, which were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

PRECAUTIONS, RESTRICTIONS: For any crop not listed on this label, applications must be made at least 30 days prior to planting the next crop. Allow a minimum of 7 days between treatment and harvest or feeding of treated vegetation.

Preharvest (Feed Barley and Wheat only)
USE INSTRUCTIONS: This product provides weed control when applied prior to the harvest of wheat or feed barley. For wheat, apply after the hard-dough stage of grain (30% or less grain moisture). For feed barley, apply after the hard-dough stage and when the grain contains 20% moisture or less. Stubble may be grazed immediately after harvest.

This product may be applied using either aerial or ground spray equipment. For ground applications, apply this product in 10 to 20 gallons of water per acre. For aerial applications, apply this product in 3 to 10 gallons of water per acre.

PRECAUTIONS, RESTRICTIONS: Do not apply more than 1 quart of this product per acre. Allow 7 days between application and harvest or grazing. Preharvest application is not recommended for wheat or barley grown for seed, as a reduction in germination or vigor may occur.

Over-the-Top Wiper Applications (Feed Barley and Wheat only)
USE INSTRUCTIONS: Wiper applications may be used in feed barley and wheat. To control common rye or cereal rye, apply after the weeds have headed and achieved maximum growth, when the rye is at least 6 inches above the wheat crop.

PRECAUTIONS, RESTRICTIONS: Allow at least 35 days between application and harvest. Do not use roller applicators.

Corn
TYPES OF CORN: Field corn, Seed corn, Silage corn, Sweet corn and Popcorn.

TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL** CROPS plus the following: Preharvest.
For glyphosate tolerant corn, see the **GLYPHOSATE TOLERANT CROPS** section of this label.

Preplant, Preemergence, At-planting
USE INSTRUCTIONS: This product may be applied alone or in a tank mixture before, during or after planting corn. Applications must be made prior to emergence of the crop.

TANK MIXTURES: Apply these tank mixtures in 10 to 20 gallons of water or 10 to 60 gallons of nitrogen solution per acre. The individual tank mix product must be registered for use on this site.

2,4-D
Aim
Atrazine
Axiom™
Balance™
Banvel™/Clarity™
Bicep Magnum™
Bicep II Magnum™
Bullet®
Degree®
Degree Xtra®
Distinct™
Dual Magnum™
Dual II Magnum™
Epic™
Frontier™/Outlook™
Fultime™
Guardsman™/Leadoff™
Harness®
Harness Xtra
Harness Xtra 5.6l
Lariat®
Lasso®/Alachlor
Linex™/Lorox™
Marksman™
Micro-Tech®
Prowl™
Python™
Simazine
Topnotch™

For difficult-to-control annual weeds such as fall panicum, barnyardgrass, crabgrass, shattercane and broadleaf signalgrass up to 2 inches tall, and Pennsylvania smartweed up to 6 inches tall, apply this product at 2 pints per acre in these tank mixtures. For other labeled annual weeds, apply 1.5 to 2 pints of this product per acre when weeds are less than 6 inches tall, and 2 to 3 pints when weeds are over 6 inches tall. When using nitrogen solutions are the carrier, use rate may need to be increased for acceptable weed control.

PRECAUTIONS, RESTRICTIONS: Applications of 2,4-D or dicamba must be made at least 7 days prior to planting corn.

For Southern states, do not apply in nitrogen solutions to tough-to-control grasses such as barnyardgrass, fall panicum, broadleaf signalgrass, annual ryegrass and any perennial weeds. The area covered by this recommendation includes from Route 50 South in Illinois and Indiana and the following states: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, New Jersey, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia.

Hooded sprayers
USE INSTRUCTIONS: This product may be used through hooded sprayers for weed control between the rows of corn. Only hooded sprayers that completely enclose the spray pattern may be used. See additional instruction for the use of hooded sprayers in the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label.

PRECAUTIONS, RESTRICTIONS: Corn must be at least 12 inches tall, measured without extending leaves. Contact of this product in any manner to any vegetation to which treatment is not intended may cause damage. Such damage shall be the sole responsibility of the applicator. Do not apply more than 1 quart of this product per acre for each application and no more than 3 quarts per acre per year for hooded sprayer applications.

Spot Treatment
USE INSTRUCTIONS: For spot treatments, apply this product prior to silking of corn.

PRECAUTIONS, RESTRICTIONS: Do not treat more than 10 percent of total field area to be harvested.

The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Preharvest
USE INSTRUCTIONS: Make applications at 35% grain moisture or less. Ensure that maximum kernel fill is complete and the corn is physiologically mature (black layer formed). For ground applications, apply up to 3 quarts of this product per acre. For aerial applications, apply up to 2 quarts of this product per acre.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between application and harvest. Preharvest application is not recommended for corn grown for seed, as a reduction in germination or vigor may occur.

Post-Harvest
USE INSTRUCTIONS: This product may be applied after harvest of corn. Higher rates may be required for control of large weeds which were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between treatment and harvest or feeding of treated vegetation.

Cotton
TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: Selective equipment, Spot treatment, Preharvest.
For glyphosate tolerant cotton, see the **GLYPHOSATE TOLERANT CROPS** section of this label.

Preplant, Preemergence, At-planting
USE INSTRUCTIONS: This product may be applied before, during or after planting cotton. Applications must be made prior to emergence of the crop.

Hooded Sprayer, Selective Equipment
USE INSTRUCTIONS: This product may be applied through hooded sprayers, recirculating sprayers, shielded applicators or wiper applicators in cotton. Allow at least 7 days between application and harvest.

PRECAUTIONS, RESTRICTIONS: See the **SELECTIVE EQUIPMENT** part of the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for information on proper use and calibration of this equipment.

Spot Treatment
USE INSTRUCTIONS: For spot treatment, apply this product prior to boll opening of cotton.

PRECAUTIONS, RESTRICTIONS: Do not treat more than 10% of the total field area to be harvested. The crop receiving spray in treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Preharvest
USE INSTRUCTIONS: This product provides weed control and cotton regrowth inhibition when applied prior to harvest of cotton. For weed control, apply at rates given in the **ANNUAL WEEDS, PERENNIAL WEEDS** and **WOODY BRUSH AND TREES RATE TABLE** sections of this label. Apply 1 pint to 2 quarts of this product per acre for cotton regrowth inhibition.

Up to 2 quarts of this product may be applied using either aerial or ground spray equipment. Apply after sufficient bolls have developed to produce the desired yield of cotton. Applications made prior to this time could affect maximum yield potential.

TANK MIXTURES: This product may be tank mixed with DEF® 6, Folex™, Ginstar or Prep™ to provide additional enhancement of cotton leaf drop.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between application and harvest of

cotton. Preharvest application is not recommended for cotton grown for seed, as a reduction in germination or vigor may occur. THE USE OF ADDITIVES, OTHER THAN THOSE LISTED ON THIS LABEL, FOR PREHARVEST APPLICATION TO COTTON IS PROHIBITED.

Fallow Systems
LABELED CROPS: This product may be applied during the fallow period prior to planting or emergence of any crop on this label.

TYPES OF APPLICATIONS: Chemical fallow, Preplant Fallow Beds, Aid-to-Tillage.

Chemical Fallow
USE INSTRUCTIONS: This product may be applied during the fallow period prior to planting or emergence of any crop listed on this label. This product may be used as a substitute for tillage to control annual weeds in fallow fields. Also, broadcast or spot treatments will control or suppress many perennial weeds in fallow fields. Ground or aerial application equipment may be used. Tank mixtures with 2,4-D and dicamba may be used. The individual tank mix product must be registered for use on this site. Applications up to 2 quarts per acre may be made by aerial application in fallow sites where there is sufficient buffer to prevent injury due to drift onto adjacent crops.

PRECAUTIONS, RESTRICTIONS: For any crop not listed on this label, applications must be made at least 30 days prior to planting. DO NOT APPLY DICAMBA TANK MIXTURES BY AIR IN CALIFORNIA.

Refer to specific product labels for crop rotation restrictions and cautionary statements of all products used in tank mixtures. Some crop injury may occur if dicamba is applied within 45 days of planting.

Preplant Fallow Beds
USE INSTRUCTIONS: This product may be applied to fallow beds prior to planting or emergence of any crop listed on this label. For any crop not listed on this label, applications must be made at least 30 days prior to planting. This product will control weeds listed in the **ANNUAL WEEDS**, **PERENNIAL WEEDS** and **WOODY BRUSH TABLE** sections of this label.

TANK MIXTURES: In addition, 12 fluid ounces of this product plus 2 to 3 fluid ounces of Goal™ 2XL per acre will control the following weeds with the maximum height or length indicated: 3" - common cheeseweed, chickweed, groundsel; 6" - London rocket, shepherd's purse.

16 fluid ounces of this product plus 2 to 3 fluid ounces of Goal 2XL per acre will control the following weeds with the maximum height or length indicated: 6" - common cheeseweed, groundsel, marestail *(Conyza canadensis)*, 12" - chickweed, London rocket, shepherd's purse.

Aid-to-Tillage
USE INSTRUCTIONS: This product may be used in conjunction with tillage practices in fallow systems or preplant to labeled crops to control downy brome, cheat, volunteer wheat, tansy mustard and foxtail. Apply 12 fluid ounces of this product in 3 to 10 gallons of water per acre. Make applications before weeds are 6 inches in height. Application must be followed by conventional tillage practices no later than 15 days after treatment and before regrowth occurs. Allow at least 1 day after application before tillage.

PRECAUTIONS, RESTRICTIONS: Tank mixtures with residual herbicides may result in reduced performance.

Grain Sorghum (Milo)
TYPE OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: Spot Treatment, Over-the-Top Wiper Applications, Preharvest.

Preplant, Preemergence, At-planting
USE INSTRUCTIONS: This product may be applied alone or in tank-mixture before, during or after planting grain sorghum. Applications must be made prior to emergence of the crop.

TANK MIXTURES: Apply these tank mixtures in 10 to 20 gallons of water or 10 to 60 gallons of nitrogen

solution per acre. The individual tank mix product must be registered for use on this site.

Atrazine	Lariat
Bicep II Magnum	Lasso
Bullet	Micro-Tech
Dual II Magnum	

For difficult-to-control annual weeds such as fall panicum, barnyard grass, crabgrass, shattercane and broadleaf signalgrass up to 2 inches tall and Pennsylvania smartweed up to 6 inches tall, apply this product at 2 pints per acre in these tank mixtures. For other labeled annual weeds, apply 1.5 to 2 pints of this product per acre when weeds are less than 6 inches tall and 2 to 3 pints when weeds are over 6 inches tall. When using nitrogen solutions as the carrier, the use rate may need to be increased for acceptable weed control.

Spot Treatment, Over-the-Top Wiper Applications
USE INSTRUCTIONS: This product may be applied as a spot treatment in grain sorghum. Make spot treatments before heading of milo. This product may be applied with wiper applicators to control or suppress the weeds listed under **WIPER APPLICATORS** in the **SELECTIVE EQUIPMENT** section of this label.

PRECAUTIONS, RESTRICTIONS: For spot treatment, do not treat more than 10% of the total field area to be harvested. The crop receiving spray in treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

For wiper applicators, allow at least 40 days between application and harvest. Do not use roller applicators. Do not feed or graze treated milo fodder. Do not ensile treated vegetation.

Hooded sprayers
USE INSTRUCTIONS: This product may be applied through hooded sprayers for weed control between the rows of milo. Only hooded sprayers that completely enclose the spray pattern may be used. See additional instruction for the use of hooded sprayers in the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label.

Crop injury may occur when the foliage of treated weeds comes into direct contact with leaves of the crop. Do not apply this product when the leaves of the crop are growing in direct contact with weeds to be treated. Droplets, mist, foam or splatter of the herbicide solution may contact the crop and cause discoloration, stunting or destruction.

PRECAUTIONS, RESTRICTIONS: Milo must be at least 12 inches tall, measured without extending leaves. Treat before milo sends tillers between the drill rows. If such tillers are contacted with the spray solution, the main plant may be killed. Contact of this product in any manner to any vegetation to which treatment is not intended may cause damage. Such damage shall be the sole responsibility of the applicator. Do not graze or feed milo forage or fodder following applications of this product through hooded sprayers. Do not apply more than 1 quart of this product per acre per application and no more than 3 quarts per acre per year for hooded sprayer applications.

Preharvest
USE INSTRUCTIONS: Make applications at 30 percent grain moisture or less.

PRECAUTIONS, RESTRICTIONS: Do not apply more than 2 quarts of this product per acre. As with other herbicides that cause sudden plant death, avoid preharvest applications of this product to milo infected with charcoal rot as lodging can occur. Allow a minimum of 7 days between application and harvest of sorghum. Preharvest application is not recommended for sorghum grown for seed, as a reduction in germination or vigor may occur. The use of this product for preharvest grain sorghum (milo) is not registered in California.

Post-Harvest
USE INSTRUCTIONS: This product may be applied after harvest of grain sorghum. Higher rates may be

required for control of large weeds, which were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

This product may be applied to grain sorghum (milo) stubble following harvest to suppress or control regrowth. Apply 1 quart of this product per acre for control, or 1.5 pints of this product per acre for suppression.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between treatment and harvest or feeding of treated vegetation.

Herbs and Spices
LABELED CROPS: Allspice, Angelica, Star anise, Annatto (seed), Balm, Basil, Borage, Burnet, Camomile, Caper buds, Caraway, Black caraway, Cardamom, Cassia bark, Cassia buds, Catnip, Celery seed, Chervil (dried), Chive, Chinese chive, Cinnamon, Clary, Clove buds, Coriander leaf (cilantro or chinese parsley), Coriander seed (cilantro), Costmary, Culantro (leaf), Culantro (seed), Cumin, Curry (leaf), Dill (dillweed), Dill (seed), Epazote, Fennel seed (common and Florence), Fenugreek, White ginger flower, Grains of paradise, Horehound, Hyssop, Juniper berry, Lavender, Lemongrass, Lovage (leaf and seed), Mace, Marigold, Marjoram (including oregano), Mexican oregano, Mioga flower, Mustard (seed), Nasturtium, Nutmeg, Parsley (dried), Pennyroyal, Pepper (black and white), Pepper leaves, Peppermint, Perilla, Poppy (seed), Rosemary, Rue, Saffron, Sage, Savory (summer and winter), Spearmint, Stevia leaves, Sweet bay, Tansy, Tarragon, Thyme, Vanilla, Wintergreen, Woodruff, Wormwood.

TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: Over-the-Top Wiper Applications (Peppermint and Spearmint only), Spot Treatments (Peppermint and Spearmint only).

PRECAUTIONS, RESTRICTIONS: When applying this product prior to transplanting or direct-seeding crops into plastic mulch, care must be taken to remove residues of this product, which could cause crop injury, from the plastic prior to planting. Residues can be removed by a single 0.5-inch application of water, either by natural rainfall or via a sprinkler system. For some crops below, it is recommended to make applications 3 days before transplanting or planting.

Over-the-Top Wiper Applications, Spot Treatments (Peppermint and Spearmint Only)
USE INSTRUCTIONS: This product may be used as a spot treatment or wiper application in spearmint and peppermint. Apply spot treatments on a spray-to-wet basis with hand-held equipment, such as backpack and knapsack sprayers, pump-up pressure sprayers, hand-guns, hand-wands or any other hand-held or motorized spray equipment used to direct the spray solution to a limited area. In wiper applications, the applicator should be adjusted so that the wiper contact point is at least 2 inches above the crop. Weeds should be a minimum of 6 inches taller than the crop.

PRECAUTIONS, RESTRICTIONS: Allow at least 7 days between applications and harvest. Further applications may be made in the same area at 30-day intervals. In spot treatment applications, no more than 10% of the total field area to be harvested should be treated at one time. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside the target area for this reason. In wiper applications, contact of the herbicide solution with the crop may result in damage or destruction.

Oil Seed Crops
LABELED CROPS: Borage, Buffalo gourd (seed), Canola, Crambe, Flax, Jojoba, Lesquerella, Meadowfoam, Mustard (seed), Rape, Safflower, Sesame, Sunflower.
For glyphosate tolerant canola, see the **GLYPHOSATE TOLERANT CROPS** section of this label.

TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS.**

USE INSTRUCTIONS: This product may be applied before, during or after planting oil seed crops. Broadcast applications must be made prior to emergence of the listed oil seed crops. Wiper applicators or hooded sprayers may be used between the rows once the crop is established.

TANK MIXTURES: For sunflowers, a tank mixture with Prowl may be applied before, during or after planting in conventional tillage systems, into a cover crop, established sod or in previous crop residue.

PRECAUTIONS, RESTRICTIONS: Do not apply more than 2 quarts of this product per acre on canola. Do not apply more than 1 quart of this product per acre for sunflowers as a single preplant or preemergent application per year. Do not feed or graze sunflower forage following application of this product.

Soybeans
TYPES OF APPLICATIONS: Those listed under **ANNUAL AND PERENNIAL CROPS** plus the following: spot treatment, preharvest, selective equipment.
For glyphosate tolerant soybeans, see the **GLYPHOSATE TOLERANT CROPS** section of this label.

Preplant, Preemergence and At-planting
USE INSTRUCTIONS: This product may be applied alone or in a tank mixture before, during or after planting soybeans. Applications must be made prior to emergence of the crop.

TANK MIXTURES: Apply these tank mixtures in 10 to 20 gallons of water per acre.

Aim™	Dual II Magnum	Micro-Tech
Amplify™	Firstrate™	Prowl
Assure II™	Flexstar™	Pursuit™
Authority™	Frontier™/Outlook™	Pursuit Plus
Boundary™	Fusion™	Reflex™
Canopy™	Gauntlet™	Scepter™
Canopy XL™	Lasso	Sencor™/Lexone™
Command™	Linex™	Squadron™
Command Xtra™	Lorox/Linuron	Steel™
Domain™	Lorox Plus™	Valor™
Dual Magnum		

This product may be tank mixed with 2,4-D or 2,4-DB. See the 2,4-D label for intervals between application and planting. The individual tank mix product must be registered for use on this site.

For difficult-to-control annual weeds such as fall panicum, barnyardgrass, crabgrass, shattercane and broadleaf signalgrass up to 2 inches tall, and Pennsylvania smartweed up to 6 inches tall, apply this product at 2 pints per acre in these tank mixtures. For other labeled annual weeds, apply 1.5 to 2 pints of this product per acre when weeds are less than 6 inches tall, and 2 to 3 pints when weeds are over 6 inches tall.

Spot Treatment
USE INSTRUCTIONS: For spot treatments, apply this product prior to initial pod set in soybeans.

PRECAUTIONS, RESTRICTIONS: Do not treat more than 10% of the total field area to be harvested. The crop receiving spray in the treated area will be killed. Take care to avoid drift or spray outside target area for the same reason.

Preharvest
USE INSTRUCTIONS: This product provides weed control when applied prior to harvest of soybeans.

Apply at rates given in the **ANNUAL WEEDS, PERENNIAL WEEDS** and **WOODY BRUSH AND TREES RATE TABLES**. This product may be applied using either aerial or ground spray equipment. Apply after pods have set and lost all green color. Care should be taken to avoid excessive seed shatter loss due to ground application equipment.

PRECAUTIONS, RESTRICTIONS: DO NOT APPLY MORE THAN 5 QUARTS PER ACRE OF THIS PRODUCT FOR PREHARVEST APPLICATIONS. DO NOT APPLY MORE THAN 2 QUART PER ACRE OF THIS PRODUCT BY AIR. Allow a minimum of 7 days between application and harvest of soybeans. Do not graze or harvest treated hay or fodder for livestock feed within 25 days of last preharvest

application. (If the application rate is 1 quart per acre or lower, the grazing restriction is reduced to 14 days after last preharvest application.) Preharvest application is not recommended for soybeans grown for seed, as a reduction in germination or vigor may occur.

Selective Equipment
USE INSTRUCTIONS: This product may be applied through recirculating sprayers, shielded applicators, hooded sprayers, wiper applicators or sponge bars in soybeans. Allow at least 7 days between application and harvest.

PRECAUTIONS, RESTRICTIONS: See the SELECTIVE EQUIPMENT part of the APPLICATION EQUIPMENT AND TECHNIQUES section of this label for information on proper use and calibration of this equipment.

Sugarcane
TYPES OF APPLICATIONS: Those listed in the ANNUAL AND PERENNIAL CROPS section.

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied in or around sugarcane fields or in fields prior to the emergence of plant cane.

PRECAUTIONS, RESTRICTIONS: Do not apply to vegetation in or around ditches, canals or ponds containing water to be used for irrigation.

Spot Treatment
USE INSTRUCTIONS: This product may be applied as a spot treatment in sugarcane. For control of volunteer or diseased sugarcane, make a 1% solution of this product in water and spray to wet the foliage of vegetation to be controlled. Volunteer or diseased sugarcane should have at least 7 new leaves.

PRECAUTIONS, RESTRICTIONS: Avoid spray contact with healthy cane plants since severe damage or destruction may result. Do not feed or graze treated sugarcane foliage following application.

Fallow Treatments
USE INSTRUCTIONS: This product may be used as a replacement for tillage in fields that are lying fallow between sugarcane crops. This product may also be used to remove the last stubble of ratoon cane. For removal of last stubble of ratoon cane, apply 4 to 5 quarts of this product in 10 to 40 gallons of water per acre to new growth having at least 7 new leaves. Allow 7 or more days after application before tillage. Ground or aerial equipment may be used. Applications up to 3 quarts per acre may be made by aerial application in fallow sites where there is sufficient buffer to prevent injury due to drift onto adjacent crops. Tank mixtures with 2,4-D and dicamba may be used. The individual tank mix product must be registered for use on this site.

Hooded Sprayers
USE INSTRUCTIONS: This product may be used through hooded sprayers for weed control between rows of sugarcane. See the APPLICATION EQUIPMENT AND TECHNIQUES section of this label for additional use instructions.

PRECAUTIONS, RESTRICTIONS: Do not allow treated weeds to come into contact with the crop. Droplets, mist, foam or splatter of the herbicide solution settling on the crop may result in discoloration, stunting or destruction. Such damage shall be the sole responsibility of the applicator.

Vegetable Crops
NOTE: THIS VEGETABLE CROPS SECTION GIVES GENERAL DIRECTIONS THAT APPLY TO ALL VEGETABLE CROPS LISTED ALPHABETICALLY BELOW. SEE THE INDIVIDUAL CROP CATEGORIES FOR SPECIFIC INSTRUCTIONS, PREHARVEST INTERVALS, PRECAUTIONS AND RESTRICTIONS.

TYPES OF APPLICATIONS: Chemical Fallow, Preplant Fallow Beds, Preplant, Preemergence, Prior to Transplanting Vegetables, At-Planting, Hooded Sprayers in Row Middles, Shielded Sprayers in Row

Middles, Wiper Applications in Row Middles, and Post-Harvest, Directed Applications (Non-Bearing Ginseng), Over-the-Top Wiper Applications (Rutabagas Only).

PRECAUTIONS, RESTRICTIONS: When applying this product prior to transplanting or direct-seeding crops into plastic mulch, care must be taken to remove residues of this product, which could cause crop injury, from the plastic prior to transplanting. Residues can be removed by a single 0.5 inch application of water, either by natural rainfall or via a sprinkler system. Care should be taken to insure that the wash water flushes off the plastic mulch and does not enter transplant holes. Applications made at emergence will result in injury or death to emerged seedlings.

Avoid contact of herbicide with foliage, green shoots or stems, bark, exposed roots (including those emerging from plastic mulch), or fruit of crops because severe injury or destruction may result. When making preemergence and at-planting applications, applications must be made before crop emergence to avoid severe crop injury. Apply before seed germination in coarse sandy soils to further minimize the risk of injury. In crops with vines, hooded sprayer, shielded sprayer and wiper applications to row middles should be made prior to vine development otherwise severe injury or destruction may result. Unless otherwise specified in this product's labeling, treatments with selective equipment including wipers and hooded sprayers must be made at least 14 days prior to harvest. Post-harvest or fallow applications must be made at least 30 days prior to planting any non-labeled crop. See the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for additional information.

Brassica Vegetables
LABELED CROPS: Broccoli, Chinese Broccoli (gai lon), Broccoli raab (rapini), Brussels sprouts, Cabbage, Chinese cabbage (bok choy), Chinese cabbage (napa), Chinese mustard cabbage (gai choy), Cauliflower, Cavalo broccolo, Collards, Kale, Kohlrabi, Mizuna, Mustard greens, Mustard spinach, Rape greens.

Bulb Vegetables
LABELED CROPS: Garlic, Great-headed garlic, Leek, Onion (dry bulb and green), Welsh onion, Shallot.

Cucurbit Vegetables and fruits
LABELED CROPS: Chayote (fruit), Chinese waxgourd (Chinese preserving melon), Citron melon, Cucumber, Gherkin, Edible gourd (includes hyotan, cucuzza, hechima, Chinese okra), Melons (all), *Momordica spp* (includes balsam apple, balsam pear, bittermelon, Chinese cucumber), Muskmelon (includes cantaloupe, casaba, crenshaw melon, golden pershaw melon, honeydew melon, honey ball melon, mango melon, Persian melon, pineapple melon, Santa Claus melon, snake melon), Pumpkin, Summer squash (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini), Winter squash (includes butternut squash, calabaza, hubbard squash, acorn squash, spaghetti squash), Watermelon.

PRECAUTIONS, RESTRICTIONS: For Cantaloupe, Casaba melon, Crenshaw melon, Cucumber, Gherkin, Gourds, Honeydew melon, Honey ball melon, Mango melon, Melons (all), Muskmelon, Persian melon, Pumpkin, Squash (summer, winter), and Watermelon, allow at least 3 days between application and planting.

Leafy Vegetables
LABELED CROPS: Amaranth (Chinese spinach), Arugula (roquette), Beet greens, Cardoon, Celery, Chinese celery, Celtuce, Chaya, Chervil, Edible-leaved chrysanthemum, Garland chrysanthemum, Corn salad, Cress (garden and upland), Dandelion, Dock (sorrel), Dokudami, Endive (escarole), Florence fennel, Gow kee, Lettuce (head and leaf), Orach, Parsley, Purslane (garden and winter), Radicchio (red chicory), Rhubarb, Spinach, New Zealand spinach, Vine spinach, Swiss chard, Watercress (upland), Water spinach.

PRECAUTIONS, RESTRICTIONS: For Watercress, avoid applications within 3 days prior to seeding and during the period between seeding and emergence to minimize the risk of injury.

Fruiting Vegetables
LABELED CROPS: Eggplant, Groundcherry (*Physalis spp*), Pepino, Pepper (includes bell pepper, chili pepper, cooking pepper, pimento, sweet pepper), Tomatillo, Tomato.

PRECAUTIONS, RESTRICTIONS: For Eggplant, Ground cherry, Pepper (all), and Tomatillo, allow at least 3 days between application and planting. For Tomato, hooded or shielded sprayer applications in row middles are not recommended.

Legume Vegetables (succulent or dried)
LABELED CROPS: Bean (*Lupinus*: includes grain lupin, sweet lupin, white lupin and white sweet lupin), Bean (*Phaseolus*: includes field bean, kidney bean, lima bean, navy bean, pinto bean, runner bean, snap bean, tepary bean, wax bean), Bean (*Vigna*: includes adzuki bean, asparagus bean, blackeyed pea, catjang, Chinese longbean, cowpea, crowder pea, moth bean, mung bean, rice bean, southern pea, urd bean, yardlong bean), Broad bean (fava), Chickpea (garbanzo), Guar, Jackbean, Lablab bean, Lentil, Pea (*Pisum*: includes dwarf pea, edible-podded pea, English pea, field pea, garden pea, green pea, snowpea, sugar snap pea), Pigeon pea, Soybean (immature seed), Sword bean.

Root and Tuber Vegetables
LABELED CROPS: Arracacha, Arrowroot, Chinese artichoke, Jerusalem artichoke, Beet (garden), Burdock, Canna, Carrot, Cassava (bitter and sweet), Celeriac, Chayote (root), Chervil (turnip-rooted), Chicory, Chufa, Dasheen (taro), Galangal, Ginger, Ginseng, Horseradish, Leren, Kava (turnip-rooted), Parsley, Parsnip, Potato, Radish, Oriental radish, Rutabaga, Salsify, Black salsify, Spanish salsify, Skirret, Sweet potato, Tanier, Turmeric, Turnip, Wasabi, Yacon, Yam bean, True yam.

Directed applications (Non-Bearing Ginseng Only)
USE INSTRUCTIONS: This product may be used for general weed control in established non-bearing ginseng. Applications may be made with boom equipment, CDA, shielded sprayers, hand-held and high volume wands, lances, and orchard guns or with wiper application equipment.

PRECAUTIONS, RESTRICTIONS: Direct applications so that there is no contact of this product with the ginseng plant. Applications must be made at least one year prior to harvest.

Over-the-Top Wiper Applications (Rutabagas Only)
USE INSTRUCTIONS: Wiper applicators may be used over-the-top of rutabagas.

PRECAUTIONS, RESTRICTIONS: Allow at least 14 days between application and harvest of rutabagas.

Miscellaneous Crops
LABELED CROPS: Aloe vera, Asparagus, Bamboo shoots, Globe artichoke, Okra, Peanut (ground nut), Pineapple, Strawberry, Sugar beet.

TYPES OF APPLICATIONS: Those listed in the **ANNUAL AND PERENNIAL CROPS** section plus the following: General weed control, Site preparation, Spot Treatment (Asparagus).

PRECAUTIONS, RESTRICTIONS: Avoid contact of herbicide with foliage, green shoots or stems, bark, exposed roots (including those emerging from plastic mulch), or fruit of crops because severe injury or destruction may result. When making preemergence and at-planting applications, applications must be made before crop emergence to avoid severe crop injury. Apply before seed germination in coarse sandy soils to further minimize the risk of injury. In crops with vines, hooded sprayer, shielded sprayer and wiper applications to row middles should be made prior to vine development otherwise severe injury or destruction may result. Unless otherwise specified in this product's labeling, treatments with selective equipment including wipers and hooded sprayers must be made at least 14 days prior to harvest. Post-harvest or fallow applications must be made at least 30 days prior to planting any non-labeled crop. See **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for additional information.

General weed control, site preparation
USE INSTRUCTIONS: This product may be applied for general weed control or for site preparation prior to planting or transplanting crops listed in this section.

PRECAUTIONS, RESTRICTIONS: When applying this product prior to transplanting or direct-seeding crops into plastic mulch, care must be taken to remove residues of this product, which could cause crop injury, from the plastic prior to planting. Residues can be removed by a single 0.5-inch application of water, either by natural rainfall or via a sprinkler system. Care should be taken to insure that the wash water flushes off the plastic mulch and does not enter transplant holes. Applications made at emergence will result in injury or death to emerged seedlings.

Do not apply within a week before the first asparagus spears emerge. Do not feed or graze treated pineapple forage following application.

Spot Treatment (Asparagus)
USE INSTRUCTIONS: This product may be applied immediately after cutting, but prior to the emergence of new spears.

Post-Harvest (Asparagus)
USE INSTRUCTIONS: This product may be applied after the last harvest and all spears have been removed. If spears are allowed to regrow, delay application until ferns have developed. Delayed treatments should be applied as a directed or shielded spray in order to avoid contact of the spray with ferns, stems or spears.

PRECAUTIONS, RESTRICTIONS: Direct contact of the spray with the asparagus may result in serious crop injury. Select and use recommended types of spray equipment for postemergence post-harvest applications. A directed spray is any application where the spray pattern is aligned in such a way as to avoid direct contact of the spray with the crop. A shielded spray is any application where a physical barrier is positioned and maintained between the spray and the crop to prevent contact of spray with the crop.

TREE, VINE AND SHRUB CROPS (Alphabetical)

NOTE: THIS SECTION GIVES GENERAL DIRECTIONS THAT APPLY TO ALL LISTED TREE, VINE AND SHRUB CROPS WITHIN THIS SECTION GROUPED ALPHABETICALLY BELOW. SEE THE INDIVIDUAL CROP CATEGORIES FOR SPECIFIC INSTRUCTIONS, PREHARVEST INTERVALS, PRECAUTIONS AND RESTRICTIONS.

TYPES OF APPLICATIONS: Preplant (Site Preparation) Broadcast Sprays, General Weed Control, Middles (between rows of trees, vines or bushes), Strips (within rows of trees, vines or bushes), Selective Equipment (shielded sprayers, wiper treatments), Directed Sprays, Spot Treatments, Perennial Grass Suppression, Cut Stump.

Applications may be made with boom equipment, CDA equipment, shielded sprayers, hand-held and high-volume wands, lances, orchard guns or with applicator equipment, except as directed.

GENERAL USE INSTRUCTIONS
This product may be applied in middles (between rows of trees or vines), strips (within rows of trees or vines) and for general weed control or perennial grass suppression in established tree fruit and nut groves, orchards, berries and vineyards. It may also be used for site preparation prior to planting or transplanting these crops. Apply 1 pint to 5 quarts per acre according to the ANNUAL WEEDS and PERENNIAL WEEDS RATE TABLES sections of this label. Utilize rates at the higher end of the recommended rate range when weeds are stressed, growing in dense populations or are greater than 12 inches tall. Repeat applications may be made up to a maximum of 10.6 quarts per acre per year.

The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredient, whether applied as mixtures or separately. Calculate the application rates and ensure that the total use of this and other glyphosate or sulfosate containing products does not exceed stated maximum use rate.

GENERAL PRECAUTIONS, RESTRICTIONS
Extreme care must be exercised to avoid contact of herbicide solution, spray, drift or mist with foliage or green bark of trunk, branches, suckers, fruit or other parts of trees, canes and vines. Avoid applications when recent pruning wounds or other mechanical injury has occurred. Contact of this product with other than matured brown bark can result in serious crop damage or destruction. Only shielded or directed sprayers may be used in crops with potential for crop contact, and then only where there is sufficient clearance. For applications in strips (within rows of trees), only selective equipment (directed sprays, hooded sprayers, shielded applicators or wipers) should be used to minimize the potential for leakage or drift of herbicide sprays onto crop. For berry crops, hooded or shielded sprayers must be fully enclosed including top, sides, front and back. Only wipers or shielded applicators capable of preventing all contact with crop may be used. See **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for additional directions and precautions.

Allow a minimum of 3 days between application and transplanting.

Middles (between rows of trees, vines or bushes)
USE INSTRUCTIONS: This product will control or suppress annual and perennial weeds and ground covers growing between the rows of labeled tree and vine crops. If weeds are under drought stress, irrigate prior to application. Reduced control may result if weeds have been mowed prior to application.

TANK MIXTURES: A tank mixture of this product plus Goal 2XL may be used for annual weeds in middles between rows of citrus crops, tree fruits, tree nuts and vine crops. This mixture is recommended when weeds are stressed or growing in dense populations. 16 to 32 fluid ounces per acre of this product plus 3 to 12 fluid ounces per acre of Goal 2XL will control annual weeds with a maximum height or diameter of 6 inches, including crabgrass, common groundsel, junglerice, common lambsquarters, redroot pigweed, London rocket, common ryegrass, shepherd's purse, annual sowthistle, filaree (suppression), horseweed/marestail (*Conyza canadensis*), stinging nettle and common purslane (suppression). 16 to 32 fluid ounces per acre of this product plus 3 to 12 fluid ounces per acre of Goal 2XL will control common cheeseweed (malva) or hairy fleabane (*Conyza bonariensis*) with a maximum height or diameter of 3 inches.

Strips (in rows of trees, vines or bushes)
TANK MIXTURES: This product may be applied in rows of tree or vine crops in tank mixtures with the following products:

Devrinol™ 50 DF	Simazine 4L
Direx™ 4L	Simazine 80W
Goal 2XL	Sim-Trol™ 4L
Karmex DF	Solicam™ DF
Krovar I	Surflan™ AS
Prowl	Surflan 75W
Princep Caliber™ 90	

Do not apply these tank mixtures in Puerto Rico.

Refer to the individual product labels for specific crops, rates, geographic restrictions and precautionary statements.

Perennial Grass Suppression
This product will suppress perennial grasses such as bahiagrass, Bermudagrass, tall fescue, orchardgrass, Kentucky bluegrass, and quackgrass that are grown as ground covers in tree and vine crops.

For suppression of tall fescue, fine fescue, orchardgrass and quackgrass, apply 8 fluid ounces of this product in 10 to 20 gallons of water per acre.

For suppression of Kentucky bluegrass covers, apply 6 fluid ounces of this product per acre. Do not add

ammonium sulfate.

For best results, mow cool season grass covers in the spring to even their height and apply this product 3 to 4 days after mowing.

For suppression of vegetative growth and seedhead inhibition of bahiagrass for approximately 45 days, apply 6 fluid ounces of this product in 10 to 25 gallons of water per acre. Apply 1 to 2 weeks after full green-up or after mowing to a uniform height of 3 to 4 inches. This application must be made prior to seedhead emergence.

For suppression up to 120 days, apply 4 fluid ounces of this product per acre, followed by an application of 2 to 4 fluid ounces per acre about 45 days later. Make no more than 2 applications per year.

For burndown of Bermudagrass, apply 1 to 2 quarts of this product in 3 to 20 gallons of water per acre. Use this treatment only if reduction of the Bermudagrass stand can be tolerated. When burndown is required prior to harvest, allow at least 21 days to ensure sufficient time for burndown to occur.

For suppression of Bermudagrass, apply 6 to 16 fluid ounces of this product per acre east of the Rocky Mountains and 16 fluid ounces of this product per acre to the west of the Rocky Mountains. Apply in a total spray volume of 3 to 20 gallons per acre, no sooner than 1 to 2 weeks after full green-up. If the Bermudagrass is mowed prior to application, maintain a minimum of 3 inches in height. Sequential applications may be made when regrowth occurs and Bermudagrass injury and stand reduction can be tolerated. East of the Rocky Mountains, rates of 6 to 10 fluid ounces of this product per acre should be used in shaded conditions or where a lesser degree of suppression is desired.

Cut Stump (Tree crops)
USE INSTRUCTIONS: Cut stump applications of this product may be made during site preparation or site renovation, prior to transplanting tree crops. This product will control regrowth of cut stumps and resprouts of many types of tree species, some of which are listed below.

Citrus Trees: Calamondin, Chironja, Citron, Citrus hybrids, Grapefruit, Kumquat, Lemon, Lime, Mandarin (Tangerine), Orange (all), Pummelo, Tangelo, Tangor.

Fruit Trees: Apple, Apricot, Cherry (sweet, sour), Crabapple, Loquat, Mayhaw, Nectarine, Olive, Peach, Pear, Plum/Prune (all), Quince.

Nut Trees: Almond, Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert (hazelnut), Hickory Nut, Macadamia, Pecan, Pistachio, Walnut (black, English).

Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 50 to 100 percent solution of this product to the freshly cut surface immediately after cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

PRECAUTIONS, RESTRICTIONS: DO NOT MAKE CUT STUMP APPLICATIONS WHEN THE ROOTS OF ADJACENT DESIRABLE TREES MAY BE GRAFTED TO THE ROOTS OF THE CUT STUMP. INJURY RESULTING FROM ROOT GRAFTING MAY OCCUR IN ADJACENT TREES. Some sprouts, stems or trees may share the same root system. Adjacent trees having a similar age, height and spacing may signal shared roots. Whether grafted or shared, injury is likely to occur to non-treated stems/trees when one or more trees sharing common roots are treated.

Berry Crops
LABELED CROPS: Blackberry (including bingleberry, black satin berry, boysenberry, Cherokee blackberry, chesterberry, Cheyenne blackberry, coryberry, darrowberry, dewberry, Dirksen thornless berry, Himalayaberry, hullberry, juneberry, lavacaberry, lowberry, lucretiaberry, marionberry, nectarberry, olallieberry, Oregon evergreen berry, phenomenalberry, rangeberry, ravenberry, rossberry, Shawnee blackberry and youngberry), Blueberry, Cranberry, Currant, Elderberry, Gooseberry, Huckleberry, Loganberry, Raspberry (black, red), Salal.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section plus Spot Treatment in Cranberry Production and Post-Harvest Treatments in Cranberry Production.

PRECAUTIONS, RESTRICTIONS: To avoid damage, herbicide sprays must not be allowed to contact desirable vegetation, including green shoots, canes, or foliage. Allow a minimum of 30 days between last application and harvest in cranberries. Allow a minimum of 14 days between last application and harvest in other berry crops. Do not make directed sprays within the cranberry bush areas prior to berry harvest.

Spot Treatment in Cranberry Production
USE INSTRUCTIONS: Spot treatments may be used to control weeds growing in dry ditches (interior and perimeter) of cranberry production areas. Hand-held sprayers or other appropriate application equipment listed under APPLICATION EQUIPMENT AND TECHNIQUES in this label may be used. Drop water level to remove standing water in ditches prior to application. In hand-held sprayers, use 1 to 2 percent solution of this product. Spray to wet vegetation, not to run-off.

PRECAUTIONS, RESTRICTIONS: For treatments after draw down of water in dry ditches, allow 2 or more days after treatment before reintroduction of water to achieve maximum weed control. Apply this product within 1 day after draw down to ensure applicalion to actively growing weeds. Allow a minimum of 30 days between last application and harvest of cranberries. Do not apply this material through the irrigation system. Do not make applications by air. Do not apply directly to water. Use nozzles that emit medium- to large-sized droplets to minimize drift in order to avoid crop injury.

Post-Harvest Treatments in Cranberry Production
USE INSTRUCTIONS: Application of this product may be made after the harvest of cranberries to control weeds growing within the field. Best results will be obtained if applications are made to vines that appear dormant (after they have turned red). Hand-held sprayers, wipers, or other appropriate application equipment listed under APPLICATION EQUIPMENT AND TECHNIQUES in this label may be used. If using hand-held sprayers, use a 0.5 to 1 percent solution of this product. Spray to wet vegetation, not to run-off. If using hand-held boom sprayers, apply 2 to 4 quarts of this product per acre.

PRECAUTIONS, RESTRICTIONS: Make applications only after cranberries have been harvested. Do not treat more than 10 percent of the total bog. Allow a minimum of 6 months after last application and next harvest of cranberries. Do not apply this product through the irrigation system. Do not make applications by air. Do not apply directly to water. Even though vines appear dormant, contact of the herbicide solution with desirable vegetation may result in damage or severe plant injury. Cranberry plants that are directly sprayed may be killed.

Citrus
LABELED CROPS: Calamondin, Chironja, Citron, Citrus Hybrids, Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Orange (all), Pummelo, Satsuma Mandarin, Tangelo (ugli), Tangor.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

USE INSTRUCTIONS: (The recommendations below pertain to applications in Florida and Texas): For burndown or control of the weeds listed below, apply the recommended rates of this product in 3 to 30 gallons of water per acre. Where weed foliage is dense, use 10 to 30 gallons of water per acre.

For goatweed, apply 2 to 3 quarts of this product per acre. Apply in 20 to 30 gallons of water per acre when plants are actively growing. Use 2 quarts per acre when plants are less than 8 inches tall and 3 quarts per acre when plants are greater than 8 inches tall. If goatweed is greater than 8 inches tall, the addition of Krovar™ I or Karmex™ may improve control. Refer to the individual product labels for specific crops, rates, geographic restrictions and precautionary statements.

Perennial Weeds:

S=Suppression	B=Burndown			
PC=Partial control	C=Control			
WEED	GLYFOS X-TRA RATE PER ACRE			
SPECIES	1 QT	2 QT	3 QT	5 QT
Bermudagrass	B	--	PC	C
Guineagrass				
Texas and Florida Ridge	B	C	C	C
Florida Flatwoods	--	B	C	C
Paragrass	B	C	C	C
Torpedograss	S	--	PC	C

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 1 day between last application and harvest in citrus crops. For citron groves, apply as directed sprays only.

Miscellaneous Tree Food Crops
LABELED CROPS: Cactus (fruit and pads), Palm (heart, leaves), Palm (oil).

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

Non-Food Tree Crops
LABELED CROPS: Pine, Poplar, Eucalyptus, Christmas Trees, Other Non-Food Tree Crops.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

Directed Sprays, Spot Treatment, Wiper Applications
USE INSTRUCTIONS: This product may be used as a post-directed spray and spot treatment around established poplar, eucalyptus, Christmas trees and other non-food tree crops.

PRECAUTIONS, RESTRICTIONS: Care must be exercised to avoid contact of spray, drift or mist with foliage or green bark of established Christmas trees and other pine trees. Desirable plants may be protected from the spray solution by using shields or coverings made of cardboard or other impermeable material. THIS PRODUCT IS NOT RECOMMENDED FOR USE AS AN OVER-THE-TOP BROADCAST SPRAY IN CHRISTMAS TREES AND OTHER PINE TREES.

Site Preparation
USE INSTRUCTIONS: This product may be used prior to planting non-food tree crops.

PRECAUTIONS, RESTRICTIONS: Precautions should be taken to protect non-target plants during site preparation applications.

Pome Fruit
LABELED CROPS: Apple, Crabapple, Loquat, Mayhaw, Pear (including oriental pear), Quince.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 1 day between last application and harvest in pome crops.

Stone Fruit
LABELED CROPS: Apricot, Cherry (sweet, tart), Nectarine, Olive, Peach, Plum/Prune (all types), Plumcot.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 17 days between last application and harvest in stone fruit crops. For olive groves, apply as directed sprays only.

Restrictions on Application Equipment
For cherries, any application equipment listed in this section may be used in all states.

Any application equipment listed in this section may be used in apricots, nectarines, peaches and plums/prunes growing in Arizona, California, Colorado, Idaho, Kansas, Kentucky, New Jersey, North Dakota, Oklahoma, Oregon, Texas, Utah and Washington, except for peaches grown in the states specified in the following paragraph. In all other states, use wiper equipment only.

For PEACHES grown in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee only, apply with a shielded boom sprayer or shielded wiper applicator, which prevents any contact of this product with the foliage or bark of trees. Apply no later than 90 days after first bloom. Applications made after this time may result in severe damage. Remove suckers and low-hanging limbs at least 10 days prior to application. Avoid applications near trees with recent pruning wounds or other mechanical injury. Apply only near trees that have been planted in the orchard for 2 or more years. EXTREME CARE MUST BE TAKEN TO ENSURE NO PART OF THE PEACH TREE IS CONTACTED.

Tree Nuts
LABELED CROPS: Almond, Beechnut, Betelnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Coconut, Filbert (hazelnut), Hickory nut, Macadamia, Pecan, Pine nut, Pistachio, Walnut (black, English).

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 3 days between last application and harvest of tree nuts, except coconut. Allow 14 days between application and harvest in coconut.

Tropical and Subtropical Trees and Fruits
LABELED CROPS: Ambarella, Atemoya, Avocado, Banana, Barbados cherry (acerola), Biriba, Blimbe, Breadfruit, Cacao (cocoa) bean, Canistel, Carambola (starfruit), Cherimoya, Coffee, Custard apple, Dates, Durian, Feijoa, Figs, Governor's plum, Guava, Ilama, Imbe, Jaboticaba, Jackfruit, Longan, Lychee, Mamey apple, Mango, Mangosteen, Marmaladebox (genip), Mountain papaya, Papaya, Pawpaw, Plantain, Persimmon, Pomegranate, Pulasan, Rambutan, Rose apple, Sapodilla, Sapote (black, mamey, white), Spanish lime, Soursop, Star apple, Sugar apple, Surinam cherry, Tamarind, Tea, Ti (roots and leaves), Wax jambu.

TYPES OF APPLICATIONS: Those listed in the TREE, VINE AND SHRUB CROPS section plus Bananacide (Banana Only).

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 1 day between last application and harvest in banana, guava, papaya and plantain crops. Allow a minimum of 14 days between last application and harvest for any other tropical or subtropical tree fruit. Allow a minimum of 28 days between last application and harvest in coffee crops. In coffee and banana, delay applications 3 months after transplanting to allow the new coffee or banana plant to become established.

Bananacide (Banana Only)
USE INSTRUCTIONS: This product may be used to destroy banana plants infected with the Banana Bunchy Top Virus as well as non-infected banana plants to establish disease free buffers around plantations. Remove all fruit from the plants within the treatment area prior to treatment. Inject 1/25 fluid ounce (1 mL) of this product's concentrate per 2 to 3 inches of pseudostem diameter. Make the injection at least one foot above the ground, except for very small plants, which should be injected vertically into the top. Any subsequent regrowth must also be destroyed. All plants and mats (or units) adjacent (within a 4-foot radius) to a treated mat shall be mechanically destroyed.

For control of the Banana Bunchy Top Virus, it is critical that the grower follow a strict control program involving monitoring for diseased plants, spraying to control the aphid vector and destruction of all infected mats (or units). An infected plant may not show symptoms of the banana bunchy top virus for up to 125 days, therefore it is critical that the entire mat (or unit) containing the diseased plant be destroyed immediately.

PRECAUTIONS, RESTRICTIONS: Do not apply more than ½ fluid ounce (15 mL) of this product's concentrate per mat (or unit). Remove all fruit from plants and mats (or units) prior to treatment. Do not harvest any fruit or plant materials from treated mats (or units) following injection. Do not allow livestock to consume treated plant materials. Following transplant of new banana plants into treated areas, allow plants to become established for 3 months before applying this product for general weed control.

Vine Crops
LABELED CROPS: Grapes (raisin, table, wine), Hops, Kiwi, Passion fruit.

TYPES OF APPLICATIONS: Those listed in the **TREE, VINE AND SHRUB CROPS** section.

USE INSTRUCTIONS: Applications should not be made when green shoots, canes or foliage are in the spray zone.

In the Northeast and Great Lakes regions, applications must be made prior to the end of bloom stage of grapes to avoid injury, or make applications with shielded sprayers or wiper equipment.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 14 days between last application and harvest in vine crops. Do not use selective equipment in kiwi.

PASTURE GRASSES, FORAGE LEGUMES AND RANGELANDS

Alfalfa, Clover and Other Forage Legumes
LABELED CROPS: Alfalfa, Clover, Kenaf, Kudzu, Lespedeza, Leucaena, Lupin, Sainfoin, Trefoil, Velvet bean, Vetch (all types).

TYPES OF APPLICATIONS: Preplant, Preemergence, At-planting, Spot Treatment (Alfalfa and Clover only), Over-The-Top Wiper Applications (Alfalfa and Clover only), Renovation, Preharvest (Alfalfa only).

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied before, during or after planting crops listed in this section. Applications must be made prior to emergence of the crop.

PRECAUTIONS, RESTRICTIONS: If a single application is made at rates of 2 quarts per acre or less, no waiting period between treatment and feeding or grazing is required. If application rates greater than 2 quarts per acre are made, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Spot Treatment, Over-The-Top Wiper Applications (Alfalfa and Clover Only)
USE INSTRUCTIONS: This product may be applied as a spot treatment in alfalfa or clover. This product may be applied with wiper applicators to control or suppress the weeds listed under **WIPER APPLICATORS** in the **SELECTIVE EQUIPMENT** section of this label. Applications may be made in the same area at 30-day intervals.

PRECAUTIONS, RESTRICTIONS: For spot treatment and wiper applications, apply in areas where the movement of domestic livestock can be controlled. No more than 10 percent of the total field area should be treated at one time. Remove domestic livestock before application and wait 14 days after application before grazing livestock or harvesting.

Preharvest (Alfalfa Only)
USE INSTRUCTIONS: This product may be used in declining alfalfa stands or any stand of alfalfa where crop destruction is acceptable. This application will severely injure or destroy the stand of alfalfa. This product will control annual and perennial weeds, including quackgrass, when applied prior to the harvest

of alfalfa. The treated crop and weeds can be harvested and fed to livestock after 36 hours. Allow a minimum of 36 hours between application and harvest. Applications may be made at any time of the year. Make only one application to an existing stand of alfalfa per year. For control of quackgrass, apply in the spring, late summer or fall when quackgrass is actively growing. Treatments for quackgrass must be followed by deep tillage for complete control.

PRECAUTIONS, RESTRICTIONS: Do not apply more than 2 quarts of this product per acre as a preharvest treatment. Preharvest application is not recommended for alfalfa grown for seed, as a reduction in germination or vigor may occur.

Renovation
USE INSTRUCTIONS: This product may be applied as a broadcast spray to renovate existing stands of alfalfa, clover and other labeled forage legumes. Labeled crops may be planted into the treated area.

PRECAUTIONS, RESTRICTIONS: Remove domestic livestock before application. If application rates of 2 quarts per acre or less are used wait 36 hours after application before grazing or harvesting. If application rates greater than 2 quarts per acre are used, wait 8 weeks between applications and grazing or harvesting.

Conservation Reserve Program (CRP)
TYPES OF APPLICATIONS: Renovation (rotating out of CRP), Site Preparation, Postemergence Weed Control in Dormant CRP Grasses, Over-The-Top Wiper Applications.

Renovation (rotating out of CRP), Site Preparation
USE INSTRUCTIONS: This product may be used to prepare CRP land for crop protection. Refer to Federal, state or local use guides for CRP renovation recommendations. For any crop not listed in the CROPS sections of this label, applications must be made at least 30 days prior to planting.

Postemergence Weed Control in Dormant CRP Grasses, Over-The-Top Wiper Applications
USE INSTRUCTIONS: This product may be used to suppress competitive growth and seed production of undesirable vegetation in CRP acres. Such applications may be made with wiper application equipment or as a broadcast or spot treatment to dormant CRP grasses. For selective applications with broadcast spray equipment, apply 12 to 16 fluid ounces of this product per acre in early spring before desirable CRP grasses, such as crested and tall wheatgrass, break dormancy and initiate green growth. Late fall applications can be made after desirable perennial grasses have reached dormancy.

PRECAUTIONS, RESTRICTIONS: Some stunting of CRP perennial grasses will occur if broadcast applications are made when plants are not dormant. Do not apply more than 3 quarts per acre per year onto CRP grasses.

Grass or Turfgrass Seed Production
LABELED CROPS: Any grass (*Gramineae* family) except corn, sorghum, sugarcane and those listed above under **CEREAL CROPS**.

TYPES OF APPLICATIONS: Preplant, Preemergence, Renovation, Site preparation, Shielded sprayers, Over-The-Top Wiper Applications, Spot Treatments, Creating Rows in Annual Ryegrass.

Preplant, Preemergence, Renovation, Site Preparation
USE INSTRUCTIONS: This product may be applied before, during or after planting or for renovation of turf or forage grass areas grown for seed production. Applications must be made prior to the emergence of the crop to avoid crop injury. For maximum control of existing vegetation, delay planting to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses, such as Bermudagrass, summer or fall applications provide best control.

PRECAUTIONS, RESTRICTIONS: Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after application to allow proper translocation into underground plant parts. If application rates total 3

quarts per acre or less, no waiting period between treatment and feeding or livestock grazing is required. If the rate is greater than 3 quarts per acre, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Shielded Sprayers
USE INSTRUCTIONS: Apply 1 to 3 quarts of this product as a broadcast spray in 10 to 20 gallons of water per acre to control weeds in the rows. Uniform planting in straight rows aids in shielded sprayer applications. Best results are obtained when the grass seed crop is small enough to easily pass by or through the protective shields.

PRECAUTIONS, RESTRICTIONS: Contact of this product in any manner to any vegetation to which treatment is not intended may cause damage. Such damage shall be the sole responsibility of the applicator.

Over-The-Top Wiper Applications
PRECAUTIONS, RESTRICTIONS: Contact of the herbicide solution with desirable vegetation may result in damage or destruction. Applicators should be adjusted so that the wiper contact point is at least 2 inches above the desirable vegetation. Weeds should be a minimum of 6 inches above the desirable vegetation. Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. This may occur in dense clumps, severe infestations, or when height of weeds varies so that not all weeds are contacted. In these instances, repeat treatments may be necessary. Better results may be obtained if 2 applications are made in opposite directions.

Spot Treatments
USE INSTRUCTIONS: Use a 1- to 1.5-percent solution.

PRECAUTIONS, RESTRICTIONS: Apply this product prior to heading of grasses. The crop receiving the spray in the treated area will be killed. Take care to avoid drift or spray outside the target area for the same reason.

Creating Rows in Annual Ryegrass
USE INSTRUCTIONS: Use 16 to 32 fluid ounces of this product per acre. Use the higher rate when the ryegrass is greater than 6 inches tall. Best results are obtained when applications are made before the ryegrass reaches 6 inches in height.

PRECAUTIONS, RESTRICTIONS: Set nozzle heights to allow the establishment of the desired row spacing while preventing spray droplets, spray fines, or drift to contact the ryegrass plants not treated. Use of low-pressure nozzles, or drop nozzles designed to target the application over a narrow band are recommended.

Grower assumes all responsibility for crop losses from misapplication.

Pastures
LABELED CROPS: Any grass (*Gramineae* family) except corn, sorghum, sugarcane and those listed above under **CEREAL CROPS** including Bahiagrass, Bermudagrass, Bluegrass, Brome, Fescue, Guineagrass, Kikuyugrass, Orchardgrass, Pangola grass, Ryegrass, Timothy, Wheatgrass.

TYPES OF APPLICATIONS: Spot Treatment, Over-The-Top Wiper Applications, Preplant, Preemergence, Pasture Renovation, Postemergence Broadcast.

Spot Treatment, Over-The-Top Wiper Applications
USE INSTRUCTIONS: This product may be applied as a spot treatment or with wiper applicators in pastures. Applications may be made in the same area at 30-day intervals.

PRECAUTIONS, RESTRICTIONS: For spot treatments or wiper application methods using rates of 3 quarts per acre or less, the entire field or any portion of it may be treated. When spot treatments or wiper applications are made using rates above 3 quarts per acre, no more than 10 percent of the total pasture

may be treated at any one time. To achieve maximum performance, remove domestic livestock before application and wait 7 days after application before grazing livestock or harvesting.

Preplant, Preemergence, Pasture Renovation
USE INSTRUCTIONS: This product may be applied prior to planting or emergence of forage grasses. In addition, this product may be used to control perennial pasture species listed on this label prior to re-planting.

PRECAUTIONS, RESTRICTIONS: If application rates total 3 quarts per acre or less, no waiting period between treatment and feeding or livestock grazing is required. If the rate is greater than 3 quarts per acre, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Rangelands
TYPES OF APPLICATIONS: Postemergence.

USE INSTRUCTIONS: This product will control or suppress many annual weeds growing in perennial cool and warm-season grass rangelands.

Preventing viable seed production is key to the successful control and invasion of annual grassy weeds in rangelands. Follow-up applications in sequential years should eliminate most of the viable seeds.

Grazing of treated areas should be delayed to encourage growth of desirable perennials. Allowing desirable perennials to flower and reseed in the treated area will encourage successful transition.

PRECAUTIONS, RESTRICTIONS: Do not use ammonium sulfate when spraying rangeland grasses with this product. Do not apply more than 3 quarts per acre per year.

Postemergence
Apply 12 to 16 fluid ounces of this product per acre to control or suppress many weeds, including downy brome, cheatgrass, cereal rye and jointed goatgrass in rangelands. Apply when most mature brome plants are in early flower and before the plants, including seedheads, turn color. Allowing for secondary weed flushes to occur in the spring following rain events further depletes the seed reserve and encourages perennial grass conversion on weedy sites. Fall applications are possible, and recommended, where spring moisture is usually limited and fall germination allows for good weed growth.

For medusahead, apply 16 fluid ounces of this product per acre at the 3-leaf stage. Delaying applications beyond this stage will result in reduced or unacceptable control. Fire may be useful in eliminating the thatch layer produced by slow decaying culms prior to application. Allow new growth to occur before spraying after a burn. Repeat applications in subsequent years may be necessary to eliminate the seedbank before reestablishing desirable perennial grasses in medusahead-dominated rangelands.

Slight discoloration of the desirable grasses may occur, but they will regreen and regrow under moist soil conditions as effects of this product wear off.

Turf Grass Sod Production
TYPES OF APPLICATIONS: Preplant, Preemergence, Renovation, Site Preparation, Spot Treatments.

Preplant, Preemergence, Renovation, Site Preparation
USE INSTRUCTIONS: This product controls most existing vegetation prior to renovating turf grass areas or establishing turf grass grown for sod. Broadcast or hand-held equipment may be used to control sod remnants or other unwanted vegetation after sod is harvested. For maximum control of existing vegetation, delay planting or sodding to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses such as Bermudagrass, summer or fall applications provide the best control. Where existing vegetation is growing under mowed turfgrass management, apply this product after omitting at least one regular mowing to allow sufficient growth for good interception of the spray.

Desirable turf grasses may be planted following the above procedures.

PRECAUTIONS, RESTRICTIONS:
If application rates total 3 quarts per acre or less, no waiting period between treatment and livestock feeding or grazing is required. If the rate is greater than 3 quarts per acre, remove domestic livestock before application and wait 8 weeks after application before grazing treated turfgrass. Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after application to allow translocation into underground plant parts.

Spot Treatments
Hand-held equipment may be used for spot treatment of unwanted vegetation growing in existing turf grass.

GLYPHOSATE TOLERANT CROPS

The following instructions include all applications which can be made onto the specified glyphosate tolerant crops during the complete cropping season. DO NOT combine these instructions with other recommendations made for crop varieties that do not contain a glyphosate tolerant gene, in the **ANNUAL AND PERENNIAL CROPS (ALPHABETICAL)** section of this label. instructions

CHEMINOVA RECOMMENDS USE OF THIS PRODUCT FOR POSTEMERGENCE APPLICATION ONLY ON CROP VARIETIES DESIGNATED AS CONTAINING A GLYPHOSATE TOLERANT GENE.

Applying this product to crop varieties that are not designated as glyphosate tolerant will result in severe crop injury and yield loss. Avoid contact with foliage, green stems, or fruit of crops, or any desirable plants that do not contain a glyphosate tolerant gene, since severe injury or destruction will result.

The glyphosate tolerant designation indicates that the crop variety contains a patented gene that provides tolerance to this product. Glyphosate tolerant crop varieties must be purchased from an authorized licensed seed supplier.

For ground applications with broadcast equipment, apply this product in 5 to 20 gallons of spray solution per acre. Carefully select proper nozzle and spray pressure to avoid spraying a fine mist. For best results with ground application equipment use flat spray nozzles. Check for even distribution of spray droplets.

For aerial applications, apply this product in 3 to 15 gallons of water per acre. See the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for procedures to avoid spray drift that may cause injury to any vegetation not intended for treatment. Use of appropriate buffer zones will help prevent injury to adjacent vegetation.

ATTENTION: AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS WHICH DO NOT CONTAIN A GLYPHOSATE TOLERANT GENE.

See the **MIXING** and **APPLICATION EQUIPMENT AND TECHNIQUES** sections of this label for additional directions and restrictions on the application of this product.

Tank mixtures with other herbicides, insecticides, fungicides, micronutrients or foliar fertilizers may result in reduced weed control or crop injury and are NOT recommended for over-the-top applications of this product unless otherwise noted in this product label, supplemental labeling or fact sheets published separately by Cheminova. (d)

Ammonium sulfate may be mixed with this product for applications to glyphosate tolerant crops. Refer to the **MIXING** section for use instructions for ammonium sulfate.

Sprayer Preparation: It is important that sprayer and mixing equipment be clean and free of pesticide residue before making applications of this product. Follow the cleaning procedures specified on the label

of the product(s) previously used. THOROUGHLY CLEAN THE SPRAY TANK AND ALL LINES AND FILTERS TO ELIMINATE POTENTIAL CONTAMINATION FROM OTHER HERBICIDES PRIOR TO MIXING AND APPLYING THIS PRODUCT.

NOTE: The following recommendations are based on a clean start at planting by using a burndown application or tillage to control existing weeds before crop emergence. In no-till and stale seedbed systems, a preplant burn-down treatment of this product is recommended to control existing weeds prior to crop emergence. Some weeds, such as black nightshade, broadleaf signalgrass, sicklepod, Texas panicum, sandbur, annual morningglory, woolly cupgrass, shattercane, wild proso millet, burcumber and giant ragweed with multiple germination times or suppressed (stunted) weeds may require a second application of this product for complete control. The second application should be made after some regrowth has occurred and at least 10 days after a previous application of this product.

GLYPHOSATE TOLERANT CANOLA
TYPES OF APPLICATIONS: Preplant, Preemergence, At-Planting, Postemergence (In-Crop).

DO NOT USE THIS PRODUCT ON CANOLA WITH A GLYPHOSATE TOLERANT GENE PLANTED IN THE FOLLOWING STATES: ALABAMA, DELAWARE, FLORIDA, GEORGIA, KENTUCKY, MARYLAND, NEW JERSEY, NORTH CAROLINA, SOUTH CAROLINA, TENNESSEE, VIRGINIA AND WEST VIRGINIA.

THE USE OF THIS PRODUCT FOR IN-CROP APPLICATIONS OVER GLYPHOSATE TOLERANT CANOLA MAY NOT BE PRACTICED IN CALIFORNIA UNLESS THE APPLICATOR HAS AT THE TIME OF APPLICATION A CALIFORNIA-APPROVED SUPPLEMENTAL LABEL SPECIFYING THE ACCEPTED DIRECTION FOR USE.

Maximum Allowable Combined Application Quantities Per Season

1. Preplant, Preemergence, At-Planting applications 2 quarts/acre
2. Total in-crop application from emergence to 6 leaf stage 2 quarts/acre

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied before, during or after planting canola.

Postemergence (In-Crop)
USE INSTRUCTIONS: This product may be applied postemergence to glyphosate tolerant canola from emergence through the 6-leaf stage of development. Applications made during bolting or flowering may result in crop injury and yield loss. To maximize yield potential, make applications early to eliminate competing weeds.

Weeds Controlled: For specific rates of application and instructions, refer to the ANNUAL WEEDS and PERENNIAL WEEDS RATE TABLES in this booklet.

Single Application—Apply 16 to 32 fluid ounces per acre no later than the 6-leaf stage for the control of annual weeds. Avoid overlapping applications which may result in temporary yellowing, delayed flowering, and/or growth reduction. Similar injury may result when applications of more than 16 fluid ounces per acre are applied after the 4-leaf stage.

Sequential Application—Apply 32 ounces per acre to 1- to 3-leaf canola followed by a sequential application at a minimum interval of 10 days, but no later than the 6-leaf stage. Sequential applications are recommended for early emerging annual weeds and perennial weeds such as Canada thistle and quackgrass or when controlling weeds with multiple application times.

PRECAUTIONS, RESTRICTIONS: See the GLYPHOSATE TOLERANT CROPS section of this label for general precautionary instructions for use in glyphosate tolerant crops. No more than two over-the-top broadcast applications may be made from crop emergence through the 6-leaf stage of development and the total in-crop application should not exceed 64 fluid ounces per acre. Allow a minimum of 60 days between last application and canola harvest.

GLYPHOSATE TOLERANT CORN
TYPES OF APPLICATIONS: Preplant, Preemergence, At-Planting, Postemergence (In-Crop), Spot Treatment, Preharvest, Post-Harvest.

Maximum Allowable Combined Application Quantities Per Season	
Combined total per year for all applications	8 quarts per acre
Preplant, Preemergence, At-Planting applications	5 quarts per acre
Total in-crop applications from emergence through the V8 Stage or 30 inches	2 quarts per acre
Maximum preharvest application rate after maximum kernel fill is complete and the crop is physiologically mature (black layer formation) until 7 days before harvest	1 quart per acre

USE INSTRUCTIONS: This product may be applied alone or in a tank-mixture before, during or after planting corn.

TANK MIXTURES: This product may be tank mixed with Bullet, Degree, Degree Xtra, Harness, Harness Xtra, Harness Xtra 5.6L, Lariat, Lasso or Micro-Tech at 50 to 100 percent of labeled rate. Refer to the specific product label and observe all precautions and limitations on the label for any preemergence herbicide application, including application timing restrictions, soil restrictions, minimum recropping interval and rotational guidelines – the more restrictive requirements apply.

NOTE: For maximum weed control, a postemergence (in-crop) application of this product should be applied following the use of less than labeled rates of the preemergence residual products listed above.

Postemergence (in-crop)
USE INSTRUCTIONS: This product may be applied postemergence to glyphosate tolerant corn from emergence through the V8 stage (8 leaves with collars) or until corn height reaches 30 inches, whichever comes first.

When applied as directed, this product controls labeled annual grass and broadleaf weeds in glyphosate tolerant corn. Many perennial grass and broadleaf weeds will be controlled or suppressed with one or more application of this product. The postemergence application of 24 to 32 fluid ounces per acre of this product should be made before the weeds reach a height and/or density that the weeds become competitive with the crop, generally 4 inch tall weeds or less. This product may be applied alone as a postemergence in-crop application to provide control of emerged weeds listed on this label. If new flushes of weeds occur, a sequential application of this product at 24 to 32 fluid ounces per acre will control the labeled grasses and broadleaf weeds.

TANK MIXTURES: This product may be applied in tank mixture with a Bullet, Degree, Degree Xtra, Harness, Harness Xtra, Harness Xtra 5.6L and Micro-Tech at 50 to 100 percent of labeled rate. This product may be applied in tank mixture with Permit and Atrazine at labeled rates. Refer to the specific product label and observe all precautions and limitations on the label for all products used in tank mixtures, including application timing restrictions, soil restrictions, minimum re-cropping interval and rotational guidelines - the more restrictive requirements apply. The individual tank mix product must be registered for use on this site.

Tank Mix Partner	Max. Height of Corn for Application
Degree	11 inches
Degree Xtra	

Harness	
Harness Xtra	
Harness Xtra 5.6L	
Bullet*	5 inches
Micro-Tech*	
Permit	30 inches
Atrazine	12 inches

*Bullet and Micro-Tech are not registered for use as a postemergence application in Texas.

PRECAUTIONS, RESTRICTIONS: See the GLYPHOSATE TOLERANT CROPS section of this label for general precautionary instructions for use in glyphosate tolerant crops. Single in-crop applications of this product are not to exceed 1 quart per acre. Sequential in-crop applications of this product from emergence through the V8 stage or 30 inches must not exceed 2 quarts per acre per growing season. Allow a minimum of 10 days between in-crop applications of this product. Allow a minimum of 50 days between application of this product and harvest of corn forage.

Preharvest
USE INSTRUCTIONS: In glyphosate tolerant corn, up to 1 quart per acre of this product can be applied preharvest. Make applications at 35 percent grain moisture or less. Ensure that maximum kernel fill is complete and the corn is physiologically mature (black layer formed).

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between application and harvest.

Post-Harvest
USE INSTRUCTIONS: This product may be applied after harvest of corn. Higher rates may be required for control of large weeds that were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between treatment and harvest or feeding of treated vegetation.

GLYPHOSATE TOLERANT COTTON such as Roundup Ready or Glytol
TYPES OF APPLICATIONS: Preplant, Preemergence, At-Planting, Postemergence (Over-the-Top), Selective Equipment, Preharvest.

Maximum Allowable Combined Application Quantities Per Season	
Combined total per year for all applications	8 quarts per acre
Preplant, Preemergence, At-Planting applications	5 quarts per acre
Total in-crop applications from ground cracking to layby	4 quarts per acre
Maximum preharvest application rate	2 quarts per acre

PRECAUTIONS, RESTRICTIONS: See the GLYPHOSATE TOLERANT CROPS section of this label for general precautionary instructions for use in glyphosate tolerant crops. The combined total application of this product from cotton emergence until harvest must not exceed 6 quarts per acre. NO MORE THAN TWO OVER-THE-TOP BROADCAST APPLICATIONS MAY BE MADE FROM CROP EMERGENCE

THROUGH THE FOUR-LEAF (NODE) STAGE OF DEVELOPMENT. NO MORE THAN TWO APPLICATIONS SHOULD BE MADE FROM THE 5-LEAF STAGE THROUGH LAYBY. SEQUENTIAL IN-CROP OVER-THE-TOP OR POST-DIRECTED APPLICATIONS OF THIS PRODUCT MUST BE AT LEAST 10 DAYS APART AND COTTON MUST HAVE AT LEAST TWO NODES OF INCREMENTAL GROWTH BETWEEN APPLICATIONS. ALLOW A MINIMUM OF 7 DAYS BETWEEN APPLICATION AND HARVEST.

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied before, during or after planting cotton.

Postemergence (Over-the-Top)
USE INSTRUCTIONS: This product may be applied by aerial or ground application equipment at rates up to 1 quart per acre per application postemergence to glyphosate tolerant cotton from the ground cracking stage until the four leaf (node) stage of development (until the fifth true leaf reaches the size of a quarter). Over-the-top applications made after the four leaf (node) stage of development may result in boll loss, delayed maturity and/or yield loss.

Salvage treatment: This treatment may be used after the four leaf stage of development and should only be used where weeds threaten to cause the loss of the crop. One quart per acre may be applied either as an over-the-top application or as a post-directed treatment sprayed higher on the cotton plants and over the weeds. NOTE: SALVAGE TREATMENTS WILL RESULT IN SIGNIFICANT BOLL LOSS, DELAYED MATURITY AND/OR YIELD LOSS. NO MORE THAN ONE SALVAGE TREATMENT SHOULD BE USED PER GROWING SEASON.

NOTE: For specific rates of application and instructions, refer to the ANNUAL WEEDS and PERENNIAL WEEDS RATE TABLES in this booklet.

PRECAUTIONS, RESTRICTIONS: See the GLYPHOSATE TOLERANT CROPS section of this label for general precautionary instructions for use in glyphosate tolerant crops.

Selective equipment
USE INSTRUCTIONS: This product may be applied using precision post-directed or hooded sprayers at rates up to 1 quart per acre per application to glyphosate tolerant cotton through layby. At this stage, post-directed equipment should be used which directs the spray to the base of the cotton plants. Contact of the spray with cotton leaves should be avoided to the maximum extent possible. To minimize spray onto the leaves of the cotton plants, place nozzles in a low position directing a horizontal spray pattern under the cotton leaves to contact weeds in the row, and maintain low spray pressure (less than 30 psi). For best results, make applications while weeds are small (less than 3 inches).

PRECAUTIONS, RESTRICTIONS: See the SELECTIVE EQUIPMENT part of the APPLICATION EQUIPMENT AND TECHNIQUES section of this label for information on proper use and calibration of this equipment.

Preharvest
USE INSTRUCTIONS: This product may be applied for preharvest annual and perennial weed control as a broadcast treatment to glyphosate tolerant cotton after 20 percent boll crack. Up to 2 quarts of this product may be applied using either aerial or ground spray equipment.

TANK MIXTURES: This product may be tank mixed with DEF™ 6, Folex™, Ginstar or Prep™. NOTE: This product will not enhance the performance of these harvest aids when applied to glyphosate tolerant cotton.

PRECAUTIONS, RESTRICTIONS: Allow a minimum of 7 days between application and harvest of cotton. Do not apply this product to cotton grown for seed, as a reduction in germination or vigor may occur. THE USE OF ADDITIVES, OTHER THAN THOSE LISTED ON THIS LABEL, FOR PREHARVEST APPLICATION TO COTTON IS PROHIBITED.

ATTENTION: USE OF THIS PRODUCT IN ACCORDANCE WITH LABEL DIRECTIONS IS EXPECTED

TO RESULT IN NORMAL GROWTH OF GLYPHOSATE TOLERANT COTTON, HOWEVER, VARIOUS ENVIRONMENTAL CONDITIONS, AGRONOMIC PRACTICES AND OTHER FACTORS MAKE IT IMPOSSIBLE TO ELIMINATE ALL RISKS ASSOCIATED WITH THIS PRODUCT, EVEN WHEN APPLICATIONS ARE MADE IN CONFORMANCE WITH THE LABEL SPECIFICATIONS. IN SOME CASES, THESE FACTORS CAN RESULT IN BOLL LOSS, DELAYED MATURITY AND/OR YIELD LOSS.

GLYPHOSATE TOLERANT SOYBEANS

TYPES OF APPLICATIONS: Preplant, Preemergence, At-Planting, Postemergence (In-Crop), Preharvest, Post-Harvest.

THE USE OF THIS PRODUCT FOR IN-CROP APPLICATIONS OVER GLYPHOSATE TOLERANT SOYBEANS MAY NOT BE PRACTICED IN CALIFORNIA UNLESS THE APPLICATOR HAS AT THE TIME OF APPLICATION A CALIFORNIA-APPROVED SUPPLEMENTAL LABEL SPECIFYING THE ACCEPTED DIRECTION FOR USE.

Maximum Allowable Combined Application Quantities Per Season	
Combined total per year for all applications	8 quarts per acre
Preplant, Preemergence, At-Planting applications	5 quarts per acre
Total in-crop applications from cracking throughout flowering	3 quarts per acre
Maximum preharvest application rate	1 quarts per acre

PRECAUTIONS, RESTRICTIONS: See the GLYPHOSATE TOLERANT CROPS section of this label for general precautionary instructions for use in glyphosate tolerant crops.

Preplant, Preemergence, At-Planting
USE INSTRUCTIONS: This product may be applied before, during or after planting soybeans.

Postemergence (In-Crop) "applications rates"
USE INSTRUCTIONS: When applied as directed, this product will control labeled annual grass and broadleaf weeds in glyphosate tolerant soybeans. Applications of this product can be made in glyphosate tolerant soybeans from emergence (cracking) throughout flowering. Refer to the **ANNUAL WEEDS RATE TABLE** in this label for rate recommendations for specific annual weeds. In general, an initial application of 1 quart per acre on 2- to 8-inch tall weeds is recommended. Weeds will generally be 2 to 8 inches tall, 2 to 5 weeks after planting. If the initial application is delayed and weeds are larger, apply a higher rate of this product. This product may be used up to 2 quarts per acre in any single in-crop application for control of annual weeds and where heavy weed densities exist.

A 1- to 2-quarts per acre rate (single or multiple applications) of this product will control or suppress perennial weeds such as: Bermudagrass, Canada thistle, common milkweed, field bindweed, hemp dogbane, horsenettle, marestail (horseweed), nutsedge, quackgrass, rhizome johnsongrass, redvine, trumpetcreeper, swamp smartweed and wirestem muhly. For best results, allow perennial weed species to achieve at least 6 inches of growth before spraying with this product.

Under adverse growing conditions such as drought, hail, wind damage, or a poor soybean stand that slows or delays canopy closure, a sequential application may be necessary to control late flushes of weeds. IN THE SOUTHERN STATES, A SEQUENTIAL APPLICATION OF THIS PRODUCT WILL BE REQUIRED TO CONTROL NEW FLUSHES OF WEEDS IN THE GLYPHOSATE TOLERANT SOYBEAN CROP. To control giant ragweed, it is recommended that 1 quart per acre of this product ~~be applied~~ when the weed is 8 to 12 inches tall to increase control and possibly avoid the need for a sequential apply

application.
NOTE: The use of this product for in-crop applications over glyphosate tolerant soybeans is not registered in California.

PRECAUTIONS, RESTRICTIONS: The combined total application from crop emergence through harvest must not exceed 3 quarts per acre. The maximum rate for any single in-crop application is 2 quarts per acre. The maximum combined total of this product that can be applied during flowering is 2 quarts per acre.

Preharvest
USE INSTRUCTIONS: This product provides weed control when applied prior to harvest of soybeans. Up to 1 quart per acre of this product can be applied by aerial or ground application.

PRECAUTIONS, RESTRICTIONS: Care should be taken to avoid excessive seed shatter loss due to ground application equipment. Allow a minimum of 14 days between final application and harvest of soybean grain or feeding of soybean grain, forage or hay.

Post-Harvest
USE INSTRUCTIONS: This product may be applied after harvest of glyphosate tolerant soybeans. Higher rates may be required for control of large weeds that were growing in the crop at the time of harvest. Tank mixtures with 2,4-D or dicamba may be used. The individual tank mix product must be registered for use on this site.

NON-CROP USES AROUND THE FARMSTEAD

TYPES OF APPLICATIONS: General non-selective weed control, trim-and-edge, greenhouse/shadehouse, chemical mowing, cut stumps, habitat management.

General Weed Control and Trim-And-Edge
USE INSTRUCTIONS: This product may be used to control annual weeds, perennial weeds and woody brush which are found in any part of the farmstead, including building foundations, along and in fences, in dry ditches and canals, along ditchbanks, farm roads, shelterbelts, prior to landscape plantings and equipment storage areas.

TANK MIXTURES: This product may be tank mixed with the following products. Refer to these product labels for approved farmstead sites and application rates. For annual weeds, use 1 quart per acre of this product when weeds are less than 6 inches tall, 1.5 quarts per acre when weeds are 6 to 12 inches tall and 2 quarts per acre when weeds are greater than 12 inches tall. For perennial weeds, apply 2 to 5 quarts per acre in these tank mixes. For tank mixtures with these products through backpack sprayers, handguns or other high-volume spray-to-wet applications, see the **ANNUAL WEEDS—HAND HELD OR HIGH VOLUME EQUIPMENT** section of this label for recommended rates. The individual tank mix product must be registered for use on this site. specified rates

Arsenal	Plateau
Banvel/Clarity	Princep DF
Barricade 65 WG	Princep Liquid
Diuron	Ronstar 50 WP
Endurance	Sahara
Escort	Simazine
Karmex DF	Surflan
Krovar I DF	Telar
Oust	Vanquish
Pendulum 3.3 EC	2,4-D
Pendulum WDG	

This product plus dicamba tank mixtures may not be applied by air in California.

Greenhouse / Shadehouse
This product may be used to control weeds in and around greenhouses and shadehouses. Desirable vegetation must not be present during application and air circulation fans must be turned off.

Chemical Mowing
USE INSTRUCTIONS: This product will suppress perennial grasses listed in this section to serve as a substitute for mowing. Use 6 fluid ounces of this product per acre when treating Kentucky bluegrass. Use 8 fluid ounces of this product per acre when treating tall fescue, fine fescue, orchardgrass, bahiagrass or quackgrass covers. Use 16 fluid ounces of this product per acre when treating Bermudagrass. Use 64 fluid ounces of this product per acre when treating torpedograss or paragrass. Apply treatments in 10 to 20 gallons of spray solution per acre. Chemical mowing applications may be made along farm ditches and other parts of farmsteads.

PRECAUTIONS, RESTRICTIONS: Use only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

Cut Stump Treatments
TYPES OF APPLICATIONS: Treating cut stumps in any non-crop site listed on this label.

USE INSTRUCTIONS: This product will control regrowth of cut stumps and resprouts of many types of woody brush and tree species, some of which are listed below. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 50 to 100 percent solution of this product to the freshly-cut surface immediately after cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

Alder
Eucalyptus
Madrone
Oak
Pepper, brazilian
Pine, Austrian
Reed, giant
Saltcedar
Sweetgum
Tan oak
Willow

PRECAUTIONS, RESTRICTIONS: Do not make cut stump applications when the roots of desirable woody brush or trees may be grafted to the roots of the cut stump. Some sprouts, stems, or trees may share the same root system. Adjacent trees having a similar age, height and spacing may signal shared roots. Whether grafted or shared, injury is likely to occur to non-treated stems/trees when one or more trees sharing common roots are treated.

Habitat Management
TYPES OF USES: Habitat restoration and maintenance, Wildlife food plots.

Habitat Restoration and Maintenance
USE INSTRUCTIONS: This product may be used to control exotic and other undesirable vegetation in habitat management areas. Applications can be made to allow recovery of native plant species, prior to planting desirable native species, and for similar broadspectrum vegetation control requirements in habitat management areas. Spot treatments can be made to selectively remove unwanted plants for habitat maintenance and enhancement.

Wildlife Food Plots
USE INSTRUCTIONS: This product may be used as a site preparation treatment to control annual and perennial weeds prior to planting wildlife food plots. Any wildlife food species may be planted after applying this product, or native species may be allowed to repopulate the area. If tillage is needed to prepare a seedbed, wait 7 days after applying this product before tilling.

ANNUAL WEEDS RATE TABLE
(Alphabetically by Species)

WATER CARRIER VOLUMES OF 3 TO 10 GALLONS PER ACRE FOR GROUND APPLICATIONS AND 3 TO 5 GALLONS PER ACRE FOR AERIAL APPLICATIONS ARE RECOMMENDED.

Apply to actively growing annual weeds. Annual weeds are generally easier to control when they are small.
Older, mature (hardened) annual weed species may require higher rates even if they meet the size requirements.
Do not tank mix with soil residual herbicides when using these rates unless otherwise specified.
For weeds that have been mowed, grazed or cut, allow regrowth to occur prior to treatment.
This product may be used up to 48 fluid ounces per acre where heavy weed densities exist.

ANNUAL WEEDS RATE TABLE

WEED SPECIES	RATE (fluid ounces per acre) 16	24	32	40	48
	Maximum height/length (in inches)				
Ammannia, purple	3	6	12	-	18
Annoda, spurred	-	2	3	5	8
Barley	18	18+	-	-	-
Barnyardgrass	-	3	6	7	9
Bassia, fivehook	-	-	6	-	-
Beggarweed, Florida	-	5	8	-	-
Bittercress	12	20	-	-	-
Bluegrass, annual	10	-	-	-	-
Bluegrass, bulbous	6	-	-	-	-
Brome, downy[1,2]	6	12	-	-	-
Brome, Japanese	6	12	24	-	-
Browntop panicum	6	8	12	-	24
Buckwheat, wild[3]	-	1	2	-	-
Burcucumber	-	6	12	-	18
Buttercup	12	20	-	-	-
Carolina geranium	-	-	4	-	9
Carpetweed	-	6	12	-	-
Cheat[2]	6	20	-	-	-
Chervil	20	-	-	-	-
Chickweed	-	12	18	-	-

Cocklebur	12	18	24	-	36
Copperleaf, hophornbeam	-	2	4	-	6
Copperleaf, Virginia	-	2	4	-	6
Coreopsis, plains	-	6	12	-	18
Corn, volunteer	6	12	20	-	-
Corn speedwell	12	-	-	-	-
Crabgrass	3	6	12	-	-
Crowfootgrass	-	-	6	-	12
Cutleaf evening primrose	-	-	3	-	6
Devilsclaw (unicorn plant)	-	3	6	-	-
Dwarfdandelion	12	-	-	-	-
Eastern mannagrass	8	12	-	-	-
Eclipta	-	4	8	12	-
Fall panicum	4	-	6	-	12
Falsedandelion	-	20	-	-	-
Falseflax, smallseed	12	-	-	-	-
Fiddleneck	-	6	12	-	-
Field pennycress	6	12	-	-	-
Filaree	-	-	6	-	12
Fleabane, annual	6	20	-	-	-
Fleabane, hairy *(Conyza bonariensis)*	-	-	6	-	10
Fleabane, rough	3	6	12	-	-
Florida pusley	-	-	4	-	6
Foxtail, giant, bristly, yellow	6	12	20	-	-
Foxtail, Carolina	10	-	-	-	-
Foxtail, green	12	-	-	-	-
Goatgrass, jointed	6	12	-	-	-
Goosegrass	-	3	6	-	12

Grain sorghum (milo)	6	12	20	-	-
Groundcherry	-	3	6	-	9
Groundsel, common	-	6	10	-	-
Hemp sesbania	-	2	4	6	8
Henbit	-	-	6	-	12
Horseweed/Marestail* *(Conyza canadensis)*	-	6	12	-	18
Itchgrass	6	8	12	-	18
Jimsonweed	-	-	12	-	18
Johnsongrass, seedling	6	12	18	-	24
Junglerice	-	3	6	7	9
Knotweed	-	-	6	-	12
Kochia[4]	-	3 to 6	12	-	-
Lambsquarters	-	6	12	-	20
Little barley	6	12	-	-	-
London rocket	6	-	24	-	-
Mayweed	-	2	6	12	18
Morningglory, annual *(Ipomoea spp)*	-	-	3	-	6
Mustard, blue	6	12	18	-	-
Mustard, tansy	6	12	18	-	-
Mustard, tumble	6	12	18	-	-
Mustard, wild	6	12	18	-	-
Nightshade, black	-	4	6	-	12
Nightshade, hairy	-	4	6	-	12
Oats	3	6	18	-	-
Pigweed species	-	12	18	24	-
Prickly lettuce	-	6	12	-	-
Purslane	-	-	3	-	6
Ragweed, common	-	6	12	-	18
Ragweed, giant	-	6	12	-	18

Red rice	-	-	4	-	-
Rye, volunteer/cereal[2]	6	18	18÷	-	-
Ryegrass	-	-	6	-	12
Sandbur, field	6	12	-	-	-
Sandbur, longspine	6	12	-	-	-
Shattercane	6	12	20	-	-
Shepherd's purse	6	12	-	-	-
Sicklepod	-	2	4	-	8
Signalgrass, broadleaf	-	3	6	7	9
Smartweed, ladysthumb -	-	6	-	9	
Smartweed, Pennsylvania	-	-	6	-	9
Sowthistle, annual	-	-	6	-	12
Spanishneedles	-	-	6	-	12
Speedwell, purslane	12	-	-	-	-
Sprangletop	6	12	20	-	-
Spurge, prostrate	-	6	12	-	-
Spurge, spotted	-	6	12	-	-
Spurry, umbrella	6	-	-	-	-
Stinkgrass	-	12	-	-	-
Sunflower	12	18	-	-	-
Swinecress	-	5	12	-	-
Teaweed/Prickly sida	-	2	4	-	6
Texas panicum	6	8	12	-	24
Thistle, Russian[5]	-	6	12	-	-
Velvetleaf	-	-	6	-	12
Virginia pepperweed	-	18	-	-	-
Waterhemp	-	-	6	-	12
Wheat[2]	6	12	18	-	-
Wheat	-	6	12	-	18

(overwintered)					
Wild oats	3	6	18	-	-
Wild proso millet	-	6	12	-	18
Witchgrass	-	12	-	-	-
Woolly cupgrass	-	6	12	-	-
Yellow rocket	-	12	20	-	-

[1] For control of downy brome in no-till systems, use 24 fluid ounces per acre.
[2] Performance is better if application is made before this weed reaches the boot stage of growth.
[3] Use 24 fluid ounces per acre of this product to control wild buckwheat in the cotyledon to 2-leaf stage. Use 32 fluid ounces per acre to control 2- to 4-leaf wild buckwheat. For improved control of wild buckwheat over 2 inches in size, use sequential treatments of 32 fluid ounces followed by 32 fluid ounces of this product per acre.
[4] Do not treat kochia in the button stage.
[5] Control of Russian thistle may vary based on environmental conditions and spray coverage. Whenever possible, a tank mixture with 2,4-D as described below may improve control. The individual tank mix product must be registered for use on this site.

***For Control and Management of Glyphosate Resistant Horseweed (Marestail, *Conyza Canadensis*) In Cotton, Corn and Soybeans (NOT REGISTERED FOR USE IN CALIFORNIA)**

COTTON
Preplant
For control of horseweed, apply this product (32 fluid ounces per acre) in a tank-mix with Clarity®(8 fluid ounces per acre). This application must be made 21 to 35 days before planting and before horseweed reaches 6 inches in height. In order to avoid crop injury, a minimum interval of 21 days during which there is at least 1 inch of cumulative rainfall must be observed between Clarity application and planting of cotton.

Post-directed (Glyphosate Tolerant Cotton Varieties Only)
Management of early season weed competition and the development of a crop height differential between cotton and the horseweed is often achieved by a combinalion of preplant burndown and postemergence over-the-top and/or directed applications of Glyfos X-TRA Herbicide. These measures enhance the development of a height differential that is necessary to successfully make post-directed treatments. In-crop post-directed applications of MSMA (2 pounds active ingredient per acre) tank-mixed with diuron (0.5 to 0.75 pounds active ingredient per acre) should be made when the temperature is 80°F or higher.

SOYBEANS
Preplant
Apply a tank mixture of this product (32 fluid ounces per acre) with 2,4-D (0.5 pounds a.i. per acre) before horseweed exceeds 6 inches in height. See the 2,4-D product label for time intervals that are required between application and planting. For areas where 2,4-D cannot be applied due to application restrictions or proximity to a sensitive crop, contact your local retailer. The individual tank mix product must be registered for use on this site.

In-crop (Glyphosate Tolerant Soybean Varieties Only)
It is strongly encouraged that horseweed should be controlled prior to planting using recommended preplant burndown treatments. In-crop glyphosate tolerant soybeans, apply a tank mixture of this product (32 fluid ounces per acre) with Amplify™ or FirstRate™ (0.3 ounces per acre). This treatment should be used as a salvage treatment only for a horseweed infestation that was not controlled preplant. Application should be made between full emergence of the first trifoliate leaf and 50% flowering stage of soybeans. At the time of treatment, horseweed should not exceed 6 inches in height.

CORN

Preplant, At-Planting, Preemergence

Apply a tank mixture of this product (32 fluid ounces per acre) plus 2,4-D (0.5 pounds a.i. of per acre) before horseweed exceeds 6 inches in height. See the 2,4-D product label for time intervals that are required between application and planting.

Atrazine (1 to 2 pounds active ingredient per acre) may be included in the tank-mixture to provide residual control. Refer to the atrazine product label for specific use instructions.

The individual tank mix product must be registered for use on this site.

In-crop (Glyphosate Tolerant Corn Hybrids Only)

In-crop glyphosate tolerant corn, apply a tank-mixture of this product (32 fluid ounces per acre) plus Clarity (8 to 16 fluid ounces per acre) or 2,4-D (0.5 to 1.0 pounds a.i. per acre). Apply between corn emergence and the 5-leaf stage of growth (approximately 8 inches tall).

Annual Weeds – Rates for 10 to 40 Gallons per Acre

Apply 1 to 2 quarts of this product per acre. Use 1 quart per acre if weeds are less than 6 inches tall, 1.5 quarts per acre if weeds are 6 to 12 inches tall and 2 quarts per acre if weeds are greater than 12 inches tall. These rates will provide control of weeds listed in the annual weed control tables when water carrier volumes are 10 to 40 gallons per acre for ground applications. Older, mature (hardened) annual weed species may require higher rates even if they meet the size requirements.

Annual Weeds – Tank Mixtures with 2,4-D, Dicamba or Tordon 22K

12 to 16 fluid ounces of this product plus ¼ pound of dicamba or ½ pound of 2,4-D or 1 to 2 fluid ounces of Tordon 22K per acre will control the following weeds with the maximum height or length indicated: 6" – prickly lettuce, marestail/horseweed, morning glory, kochia (dicamba only), wild buckwheat (Tordon 22K only); 12" – cocklebur, lamb's quarters, pigweed, Russian thistle (2,4-D only).

16 fluid ounces of this product plus ½ pound of 2,4-D per acre will control the following weeds when they are a maximum height or length of 6 inches: common ragweed, giant ragweed, Pennsylvania smartweed and velvetleaf.

Refer to the specific product labels for crop rotation restrictions and cautionary statements of all products used in tank mixtures. Some crop injury may occur if dicamba or Tordon 22K is applied within 45 days of planting. The individual tank mix product must be registered for use on this site.

DO NOT APPLY DICAMBA TANK MIXTURES BY AIR IN CALIFORNIA.

Annual Weeds – Hand-Held or High-Volume Equipment

For control of weeds listed in the **ANNUAL WEEDS RATE TABLE**, apply a 0.5 percent solution of this product to weeds less than 6 inches in height or runner length. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds. For annual weeds over 6 inches tall, or unless otherwise specified, use a 1 percent solution.

For best results, use a 2 percent solution on harder-to-control perennials, such as Bermudagrass, dock, field bindweed, hemp dogbane, milkweed and Canada thistle.

When using application methods that result in less than complete coverage, use a 5 percent solution for annual and perennial weeds and a 5 to 10 percent solution for woody brush and trees.

Annual Weeds – Tank Mixtures with Atrazine for Fallow and Reduced Tillage Systems

For use only in Colorado, Kansas, Nebraska, Oklahoma, Oregon, South Dakota and Washington. In Oregon and Washington, do not exceed 1 pound of atrazine per acre.

24 to 28 fluid ounces of this product plus 1 to 2 pounds of atrazine per acre will control the following weeds: Barnyardgrass (requires 28 ounces for control), downy brome, green foxtail, lambsquarters, prickly lettuce, tansy mustard, pigweed, field sandbur, stinkgrass, Russian thistle, volunteer wheat,

witchgrass and kochia (add 1/8 pound of dicamba for control). The individual tank mix product must be registered for use on this site.

PERENNIAL WEEDS RATE TABLE
(Alphabetically by Species)

Apply to actively growing perennial weeds.

NOTE: If weeds have been mowed or tilled, do not treat until plants have resumed active growth and have reached the recommended stages. specified
Repeat treatments may be necessary to control weeds regenerating from underground parts or seed.
Repeat treatments must be made prior to crop emergence.
Unless otherwise stated, allow 7 or more days after application before tillage.
Best results are obtained when soil moisture is adequate for active weed growth.

Weed Species	Rate (QT/A)	Water Volume (GPA)	Hand-Held % Solution
Alfalfa	1 – 2	3 – 10	2%
Make applications after the last hay cutting in the fall. Allow alfalfa to regrow to a height of 6 to 8 inches or more prior to treatment. Applications should be followed with deep tillage at least 7 days after treatment, but before soil freeze-up.			
Alligatorweed	4	3 – 20	1.5%
For partial control, apply when most of the plants are in bloom. Repeat applications will be required to maintain control.			
Anise (fennel)	--	--	1 – 2%
Apply as a spray-to-wet treatment. Optimum results are obtained when plants are treated at the bud to full-bloom stage of growth.			
Bahiagrass	3 – 5	3 – 20	2%
Apply when most plants have reached the early head stage.			
Bentgrass	1.5	10 – 20	2%
For suppression in grass seed production areas. For ground applications only. Ensure entire crown area has resumed growth prior to a fall application. Bentgrass should have at least 3 inches of growth. Tillage prior to treatment should be avoided. Tillage 7 to 10 days after application is recommended for best results.			
Bermudagrass	3 – 5	3 – 20	2%
For control, apply 5 quarts of this product per acre. For partial control, apply 3 quarts per acre. Treat when Bermudagrass is actively growing and seedheads are present. Retreatment may be necessary to maintain control.			
Bermudagrass, Water (knotgrass)	1 – 1.5	5 – 10	2%
Apply 1.5 quarts of this product in 5 to 10 gallons of water per acre. Apply when water Bermudagrass is 12 to 18 inches in length. Allow 7 or more days before tilling, flushing or flooding the field.			

Fall applications only: Apply 1 quart of this product in 5 to 10 gallons of water per acre. Fallow fields should be tilled prior to application. Apply prior to frost on water Bermudagrass that is 12 to 18 inches in length.

This product is not registered in California for use on water Bermudagrass.

Bindweed, field	**0.5 – 5**	**3 – 20**	**2%**

Do not treat when weeds are under drought stress as good soil moisture is necessary for active growth.

For control, apply 4 to 5 quarts of this product per acre west of the Mississippi River and 3 to 4 quarts east of the Mississippi River. Apply when the weeds are at or beyond full bloom. For best results, apply in late summer or fall. Fall treatments must be applied before a killing frost.

Also for control, apply 2 quarts of this product plus ½ pound of dicamba in 10 to 20 gallons of water per acre. Do not apply by air.

For suppression on irrigated agricultural land, apply 1 to 2 quarts of this product plus 1 pound of 2,4-D in 10 to 20 gallons of water per acre with ground equipment only. Applications should be made following harvest or in fall fallow ground when the bindweed is actively growing and the majority of runners are 12 inches or more in length. The use of at least one irrigation will promote active bindweed growth.

For suppression, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre for ground applications and 3 to 5 gallons of water per acre for aerial applications. Apply by air in fallow and reduced tillage systems only. Applications should be delayed until maximum emergence has occurred and when vines are between 6 to 18 inches in length. The individual tank mix product must be registered for use on this site.

In California only, apply 1 to 5 quarts of this product per acre. Actual rate needed for suppression or control will vary within this range depending on local conditions. For suppression on irrigated land where annual tillage is performed, apply 1 quart of this product in 3 to 10 gallons of water per acre. Apply to bindweed that has reached a length of 12 inches or greater. Allow maximum weed emergence and runner growth. Allow 3 or more days after application before tillage.

Bluegrass, Kentucky	**1 – 2**	**3 – 40**	**2%**

Apply 2 quarts of this product in 10 to 40 gallons of water per acre when most plants have reached boot-to-early seedhead stage of development. For partial control in pasture or hay crop renovation, apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to actively growing plants when most have reached 4 to 12 inches in height.

Blueweed, Texas	3 – 5	3 – 40	**2%**

Apply 4 to 5 quarts of this product per acre west of the Mississippi River and 3 to 4 quarts per acre east of the Mississippi River. Apply when plants are at or beyond full bloom. New leaf development indicates active growth. For best results, apply in late summer or fall. Fall treatments must be applied before a killing frost.

Brackenfern	**3 – 4**	**3 – 40**	**1 – 1.5%**

Apply to fully expanded fronds that are at least 18 inches long.

Bromegrass, smooth	**1 – 2**	**3 – 40**	**2%**

Apply 2 quarts of this product in 10 to 40 gallons of water per acre when most plants have reached boot-to-early seedhead stage of development. For partial control in pasture or hay crop renovation, apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to actively growing plants when most have reached 4 to 12 inches in height.

Bursage, woolly-leaf	--	3 – 20	2%

For control, apply 2 quarts of this product plus ½ pound of dicamba per acre. For partial control, apply 1 quart of this product plus ½ pound of dicamba per acre. Apply when plants are producing new active growth which has been initiated by moisture for at least 2 weeks and when plants are at or beyond flowering. The individual tank mix product must be registered for use on this site.

Canarygrass, reed	2 – 3	3 – 40	2%

For best results, apply when most plants have reached the boot-to-head stage of growth.

Cattail	3 – 5	3 – 40	2%

Apply when most plants have reached the early head stage.

Clover; red or white	3 – 5	3 –20	2%

Apply when most plants have reached the early bud stage.

Also for control, apply 16 to 32 fluid ounces of this product plus ½ to 1 pound of 2,4-D in 3 to 10 gallons of water per acre. The individual tank mix product must be registered for use on this site.

Cogongrass	3 – 5	10 – 40	2%

Apply when cogongrass is at least 18 inches tall in late summer or fall. Due to uneven stages of growth and the dense nature of vegetation preventing good spray coverage, repeat treatments may be necessary to maintain control.

Dallisgrass	3 – 5	3 – 20	2%

Apply when most plants have reached the early head stage.

Dandelion	3 – 5	3 – 40	2%

Apply when most plants have reached the early bud stage of growth.

Also for control, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre. The individual tank mix product must be registered for use on this site.

Dock, curly	3 – 5	3 – 40	2%

Apply when most plants have reached the early bud stage of growth.

Also for control, apply 16 to 32 fluid ounces of this product plus ½ to 1 pound of 2,4-D in 3 to 10 gallons of water per acre. The individual tank mix product must be registered for use on this site.

Dogbane, hemp	4	3 – 40	2%

Apply when most plants have reached the late bud to flower stage of growth. Following crop harvest or mowing, allow weeds to regrow to a mature stage prior to treatment. For best results, apply in late summer or fall. For suppression, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre for ground applications and 3 to 5 gallons of water per acre for aerial applications. Delay applications until maximum emergence of dogbane has occurred. The individual tank mix product must be registered for use on this site.

Fescue (except tall)	3 – 5	3 – 20	2%

Apply when most plants have reached the early head stage.

Fescue, tall	**1 – 3**	**3 – 40**	**2%**

Apply 3 quarts of this product per acre when most plants have reached boot-to-early seedhead stage of development.

Fall applications only. Apply 1 quart of this product in 3 to 10 gallons of water per acre. Apply to fescue in the fall when plants have 6 to 12 inches of new growth. A sequential application of 1 pint per acre of this product will improve long-term control and control seedlings germinating after fall treatments or the following spring.

Guineagrass	**2 – 3**	**3 – 40**	**1%**

Apply when most plants have reached at least the 7-leaf stage of growth. Ensure thorough coverage when using hand-held equipment. In Texas and ridge of Florida, use 2 quarts for control. In the flatwoods region of Florida, 3 quarts is required for control.

Horsenettle	**3 – 5**	**3 – 20**	**2%**

Apply when most plants have reached the early bud stage.

Horseradish	**4**	**3 – 40**	**2%**

Apply when most plants have reached the late bud to flower stage of growth. For best results, apply in late summer or fall.

Iceplant	**--**	**--**	**1.5 – 2%**

Iceplant should be at or beyond the early bud stage of growth. Thorough coverage is necessary for best control.

Jerusalem artichoke	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early bud stage.

Johnsongrass	**0.5 – 3**	**3 – 40**	**1%**

In annual cropping systems, apply 1 to 2 quarts of this product per acre. Apply 1 quart of this product in 3 to 10 gallons of water per acre. Use 2 quarts of this product when applying 10 to 40 gallons of water per acre. In non-crop, or areas where annual tillage (no-till) is not practiced, apply 2 to 3 quarts of this product in 10 to 40 gallons of water per acre.

For best results, apply when most plants have reached the boot-to-head stage of growth or in the fall prior to frost. Allow 7 or more days after application before tillage. Do not tank mix with residual herbicides when using 1 quart of this product per acre.

For burndown of Johnsongrass, apply 1 pint of this product in 3 to 10 gallons of water per acre before the plants reach a height of 12 inches. For this use, allow at least 3 days after treatment before tillage.

Spot treatment (partial control or suppression) – Apply a 1 percent solution of this product when Johnsongrass is 12 to 18 inches in height. Coverage should be uniform and complete.

Kikuyugrass	**2 – 3**	**3 – 40**	**2%**

Spray when most kikuyugrass is at least 8 inches in height (3- to 4-leaf stage of growth). Allow 3 or more days after application before tillage.

Knapweed	4	3 – 40	2%

Apply when most plants have reached the late bud to flower stage of growth. For best results, apply in late summer or fall.

Lantana	--	--	1 – 1.25%

Apply at or beyond the bloom stage of growth. Use the higher application rate for plants that have reached the woody stage of growth.

Lespedeza	3 – 5	3 – 20	2%

Apply when most plants have reached the early bud stage.

Milkweed, common	3	3 – 40	2%

Apply when most plants have reached the late bud to flower stage of growth.

Muhly, wirestem	1 – 2	3 – 40	2%

Use 1 quart of this product in 3 to 10 gallons of water per acre. Use 2 quarts of this product when applying 10 to 40 gallons of water per acre or in pasture, sod or non-crop areas. Spray when the wirestem muhly is 8 inches or more in height. Do not till between harvest and fall applications or in the fall or spring prior to spring applications. Allow 3 or more days after application before tillage.

Mullein, common	3 – 5	3 – 20	2%

Apply when most plants are in the early bud stage.

Napiergrass	3 – 5	3 – 20	2%

Apply when most plants are in the early head stage.

Nightshade, silverleaf	2	3 – 10	2%

Applications should be made when at least 60 percent of the plants have berries. Fall treatments must be applied before a killing frost.

Nutsedge, purple or yellow	0.5 – 3	3 – 40	1 – 2%

Apply 3 quarts of this product per acre or apply a 1 to 2 percent solution for control of nutsedge plants and immature nutlets attached to treated plants. Treat when plants are in flower or when new nutlets can be found at rhizome tips. Nutlets that have not germinated will not be controlled and may germinate following treatment. Repeat treatments will be required for long-term control of ungerminated tubers.

Sequential applications: 1 to 2 quarts of this product in 3 to 10 gallons of water per acre will also provide control. Make applications when a majority of the plants are in the 3- to 5-leaf stage (less than 6 inches tall). Repeat this application, as necessary, when newly emerging plants reach the 3- to 5-leaf stage. Subsequent applications will be necessary for long-term control.

For partial control of existing plants, apply 1 pint to 2 quarts of this product in 3 to 40 gallons of water per acre. Treat when plants have 3 to 5 leaves and most are less than 6 inches tall. Repeat treatments will be required to control subsequent emerging plants or regrowth of existing plants.

Orchardgrass	1 – 2	3 – 40	2%

Apply 2 quarts of this product in 10 to 40 gallons of water per acre when most plants have reached boot-to-early seedhead stage of development. For partial control in pasture or hay crop renovation, apply 1 to

1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to actively growing plants when most have reached 4 to 12 inches in height.

Orchardgrass sods going to no-till corn: Apply 1 to 1.5 quarts of this product in 3 to 10 gallons of water per acre. Apply to orchardgrass that is a minimum of 12 inches tall for spring applications and 6 inches tall for fall applications. Allow at least 3 days following application before planting. A sequential application of atrazine will be necessary for optimum results. The individual tank mix product must be registered for use on this site.

Pampasgrass	--	--	**1.5 – 2%**

Pampasgrass should be at or beyond the bool stage of growth. Thorough coverage is necessary for best control.

Paragrass	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early head stage.

Phragmites	**3 – 5**	**10 – 40**	**1 – 2%**

For partial control and for best results, treat during late summer or fall when plants are actively growing and in full bloom. Treatment before or after this stage may lead to reduced control. Due to the dense nature of the vegetation, which may prevent good spray coverage or uneven stages of growth, repeat treatments may be necessary to maintain control. Visual control symptoms will be slow to develop.

Poison hemlock	--	--	**1 – 2%**

Apply as a spray-to-wet treatment. Optimum results are obtained when plants are treated at the bud to full-bloom stage of growth.

Pokeweed, common	**1**	**3 – 40**	**2%**

Apply to actively growing plants up to 24 inches tall.

Quackgrass	**1 – 3**	**3 – 40**	**2%**

In annual cropping systems, or in pastures and sods followed by deep tillage: Apply 1 quart of this product in 3 to 10 gallons of water per acre. For 10 to 40 gallons of water per acre, apply 2 quarts of this product. Do not tank mix with residual herbicides when using the 1-quart rate. Spray when quackgrass is 6 to 8 inches in height. Do not till between harvest and fall applications or in fall or spring prior to spring application. Allow 3 or more days after application before tillage. In pastures or sods, use a moldboard plow for best results.

In pastures, sods or non-crop areas where deep tillage does not follow application: Apply 2 to 3 quarts of this product in 10 to 40 gallons of water per acre when the quackgrass is greater than 8 inches tall.

Redvine	**0.75 – 2**	**5 – 10**	**2%** specified ratio ✓

For suppression, apply 24 fluid ounces of this product per acre at each of two applications 7 to 14 days apart or a single application of 2 quarts per acre. Apply recommended rates in 5 to 10 gallons of water per acre. Apply in late September or early October to plants that are at least 18 inches tall and have been growing 45 to 60 days since the last tillage operation. Make applications at least 1 week before a killing frost.

Reed, giant	--	--	**2%**

Best results are obtained when applications are made in late summer to fall.

Ryegrass, perennial	**1 – 3**	**3 – 40**	**1%**

In annual cropping systems apply 1 to 2 quarts of this product per acre. Apply 1 quart of this product in 3 to 10 gallons of water per acre. Use 2 quarts of this product when applying 10 to 40 gallons of water per acre. In non-crop, or areas where annual tillage (no-till) is not practiced, apply 2 to 3 quarts of this product in 10 to 40 gallons of water per acre.

For best results, apply when most plants have reached the boot-to-head stage of growth or in the fall prior to frost. Do not tank-mix with residual herbicides when using 1 quart of this product per acre.

Smartweed, swamp	**3 – 5**	**3 – 40**	**2%**

Apply when most plants have reached the early bud stage of growth. Also for control, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre in the late summer or fall. The individual tank mix product must be registered for use on this site.

Sowthistle, perennial	**2 – 3**	**3 – 40**	**2%**

Apply when most plants are at or beyond the bud stage of growth. After harvest, mowing or tillage in the late summer or fall, allow at least 4 weeks for initiation of active growth and rosette development prior to the application of this product. Fall treatments must be applied before a killing frost. Allow 3 or more days after application before tillage.

Spurge, leafy	**--**	**3 – 10**	**2%**

For suppression, apply 16 fluid ounces of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre in the late summer or fall. If mowing has occurred prior to treatment, apply when most of the plants are 12 inches tall. The individual tank mix product must be registered for use on this site.

Starthistle, yellow	**2**	**10 – 40**	**2%**

Best results are obtained when applications are made during the rosette, bolting and early flower stages.

Sweet potato, wild	**--**	**--**	**2%**

For partial control, apply to plants that are at or beyond the bloom stage of growth. Repeat applications may be required.

Thistle, artichoke	**--**	**--**	**2%**

For partial control, apply to plants that are at or beyond the bloom stage of growth. Repeat applications may be required.

Thistle, Canada	**2 – 3**	**3 – 40**	**2%**

Apply when most plants are at or beyond the bud stage of growth. After harvest, mowing or tillage in the late summer or fall, allow at least 4 weeks for initiation of active growth and rosette development prior to the application of this product. Fall treatments must be applied before a killing frost. Allow 3 or more days after application before tillage.

For suppression in the spring, apply 1 quart of this product, or 1 pint of this product plus ½ pound of 2,4-D in 3 to 10 gallons of water per acre. Allow rosette regrowth to a minimum of 6 inches in diameter before treating. Applications can be made as long as leaves are still green and plants are actively growing at the time of application. Allow 3 or more days after application before tillage. The individual tank mix product must be registered for use on this site.

Timothy	**2 – 3**	**3 – 40**	**2%**

For best results, apply when most plants have reached the boot-to-head stage of growth.

Torpedograss	**4 – 5**	**3 – 40**	**2%**

For partial control, apply when most plants are at or beyond the seedhead stage of growth. Repeat applications will be required to maintain control. Fall treatments must be applied before frost.

Trumpetcreeper	**2**	**5 – 10**	**2%**

For partial control, apply in late September or October, to plants that are at least 18 inches tall and have been growing 45 to 60 days since the last tillage operation. Make applications at least 1 week before a killing frost.

Vaseygrass	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early head stage.

Velvetgrass	**3 – 5**	**3 – 20**	**2%**

Apply when most plants are in the early head stage.

Wheatgrass, western	**2 – 3**	**3 – 40**	**2%**

For best results, apply when most plants have reached the boot-to-head stage of growth.

WOODY BRUSH AND TREES RATE TABLE

Apply this product after full leaf expansion, unless otherwise directed. Use higher rate for larger plants and/or dense areas of growth. On vines, use the higher rate for plants that have reached the woody stage of growth. Best results are obtained when application is made in late summer or fall after fruit formation.

In arid areas, best results are obtained when applications are made in the spring to early summer when brush species are at high moisture content and are flowering.

Unless otherwise directed, apply broadcast treatments in 3 to 40 gallons of water per acre. Ensure thorough coverage when using hand-held equipment. Symptoms may not appear prior to frost or senescence with fall treatments.

Allow 7 or more days after application before tillage, mowing or removal. Repeat treatments may be necessary to control plants regenerating from underground parts or seed. Some autumn colors on undesirable deciduous species are acceptable provided no major leaf drop has occurred. Reduced performance may result if fall treatments are made following a frost.

Weed Species	Rate (QT/A)	Hand-Held % Solution
Alder	3 – 4	1 – 1.5%
Ash*	2 – 5	1 – 2%
Aspen, quaking	2 – 3	1 – 1.5%
Bearmat (Bearclover) *	2 – 5	1 – 2%
Beech *	2 – 5	1 – 2%
Birch	2 – 3	1 – 1.5%

Blackberry	3 – 4	1 – 1.5%

Make applications after plants have reached full leaf maturity. Best results are obtained when applications are made in late summer or fall. Applications may also be made after leaf drop and until a killing frost or as long as stems are green. After berries have set or dropped in late fall, blackberry can be controlled by applying a ¾ percent solution of this product. For control of blackberries after leaf drop and until killing frost or as long as stems are green, apply 3 to 4 quarts of this product in 10 to 40 gallons of water per acre.

Blackgum	2 – 5	1 – 2%
Bracken	2 – 5	1 – 2%
Broom: French, Scotch	--	1.5 – 2%
Buckwheat, California *	--	1 – 2%

Thorough coverage of foliage is necessary for best results.

Cascara *	2 – 5	1 – 2%
Catsclaw *	--	1 – 1.5%
Ceanothus *	2 – 5	1 – 2%
Chamise	--	1%

Thorough coverage of foliage is necessary for best results.

Cherry: bitter, black, pin	2 – 3	1 – 1.5%
Coyote brush	–	1.5 – 2%

Apply when at least 50 percent of the new leaves are fully developed.

Dogwood *	2 – 5	1 – 2%
Elderberry	2 – 3	1 – 1.5%
Elm *	2 – 5	1 – 2%
Eucalyptus	--	2%

For control of eucalyptus resprouts, apply when resprouts are 6 to 12 feet tall. Ensure complete coverage. Avoid application to drought-stressed plants.

Florida holly (Brazilian Peppertree) *	2 – 5	1 – 2%
Gorse *	2 – 5	1 – 2%
Hasardia *	--	1 – 2%

Thorough coverage of foliage is necessary for best results.

Hawthorn	2 – 3	1 – 1.5%

Hazel	2 – 3	1 – 1.5%
Hickory *	2 – 5	1 – 2%
Honeysuckle	3 – 4	1 – 1.5%
Hornbeam, American *	2 – 5	1 – 2%
Kudzu	4 – 5	2%

Repeat applications may be required to maintain control.

Locust, black *	2 – 4	1 – 2%
Madrone resprouts *	–	2%

Apply to resprouts that are 3 to 6 feet tall. Best results are obtained with spring/early summer treatments.

Manzanita *	2 – 5	1 – 2%
Maple, red	2 – 4	1 – 1.5%

Apply a 1 to 1.5 percent solution when at least 50 percent of the new leaves are fully developed. For partial control, apply 2 to 4 quarts of this product per acre.

Maple, sugar	--	1 – 1.5%

Apply when at least 50 percent of the new leaves are fully developed.

Monkey flower *	–	1 – 2%

Thorough coverage of foliage is necessary for best results.

Oak; black, white *	2 – 4	1 – 2%
Oak, post	3 – 4	1 – 1.5%
Oak, northern	--	1 – 1.5%

Apply when at least 50 percent of the new pin leaves are fully developed.

Oak, southern red	2 – 3	1 – 1.5%
Persimmon *	2 – 5	1 – 2%
Pine	2 – 5	1 – 2%
Poison ivy/Poison oak	4 – 5	2%

Repeat applications may be required to maintain control. Fall treatments must be applied before leaves lose green color.

Poplar, yellow *	2 – 5	1 – 2%
Redbud, eastern	2 – 5	1 – 2%
Rose, multiflora	2	3 – 40 1%

Treatments should be made prior to leaf deterioration by leaf-eating insects.

Russian olive *	2 – 5	1 – 2%
Sage, black	--	1%

Thorough coverage of foliage is necessary for best results.

Sage, white *	2 – 5	1 – 2%
Sage brush, California	--	1%

Thorough coverage of foliage is necessary for best results.

Salmonberry	2 – 3	1 – 1.5%
Saltcedar	2 – 5	1 – 2%
Sassafras *	2 – 5	1 – 2%
Sourwood *	2 – 5	1 – 2%
Sumac; poison smooth, winged *	2 – 4	1 – 2%
Sweetgum	2 – 3	1 – 1.5%
Swordfern *	2 – 5	1 – 2%
Tallowtree, Chinese	--	1%

Thorough coverage of foliage is necessary for best results.

Tan oak resprouts *	--	2%

Apply to resprouts that are less than 3 to 6 feet tall. Best results are obtained with fall applications.

Thimbleberry	2 – 3	1 – 1.5%
Tobacco, tree *	--	1 – 2%
Trumpetcreeper	2 – 3	1 – 1.5%
Vine maple *	2 – 5	1 – 2%
Virginia creeper	2 – 5	1 – 2%
Waxmyrtle, southern *	2 – 5	1 – 2%
Willow	3 – 4	1 – 1.5%

* Partial control.

INDUSTRIAL, TURF AND ORNAMENTAL USES

GENERAL INFORMATION
(How This Product Works)

Product Description: This product is a postemergence, systemic herbicide with no soil residual activity. It gives broad-spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid containing surfactant and no additional surfactant is needed or recommended.

Optional alternate statement: It is formulated as a water-soluble liquid containing **14.5 percent** surfactant and no additional surfactant is needed or recommended.

Time to Symptoms: This product moves through the plant from the point of foliage contact to and into the root system. Visible effects on most annual weeds occur within 2 to 4 days, but on most perennial weeds may not occur for 7 days or more. Extremely cool or cloudy weather following treatment may slow activity of this product and delay development of visual symptoms. Visible effects are a gradual wilting and yellowing of the plant which advances to complete browning of above-ground growth and deterioration of underground plant parts.

Mode of Action in Plants: The active ingredient in this product inhibits an enzyme found only in plants and microorganisms that is essential to formation of specific amino acids.

Cultural Considerations: Reduced control may result when applications are made to annual or perennial weeds that have been mowed, grazed or cut, and have not been allowed to regrow to the recommended stage for treatment.

Rainfastness: Heavy rainfall soon after application may wash this product off of the foliage and a repeat application may be required for adequate control.

No Soil Activity: Weeds must be emerged at the time of application to be controlled by this product. Weeds germinating from seed after application will not be controlled. Unemerged plants arising from unattached underground rhizomes or rootstocks of perennials will not be affected by the herbicide and will continue to grow.

Tank Mixing: This product does not provide residual weed control. For subsequent residual weed control, follow a label-approved herbicide program. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used. Use according to the most restrictive label directions for each product in the mixture.

Buyer and all users are responsible for all loss or damage in connection with the use or handling of mixtures of this product with herbicides or other materials that are not expressly recommended in this label. Mixing this product with herbicides or other materials not recommended on this label may result in reduced performance.

Annual Maximum Use Rate: The combined total of all treatments must not exceed 10.6 quarts of this product per acre per year. The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredient, whether applied as mixtures or separately. Calculate the application rates and ensure that the total use of this and other glyphosate or sulfosate containing products does not exceed stated maximum use rates.

ATTENTION

AVOID CONTACT OF HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS (EXCEPT AS SPECIFIED FOR INDIVIDUAL GLYPHOSATE TOLERANT CROPS), DESIRABLE PLANTS AND TREES, BECAUSE SEVERE INJURY OR DESTRUCTION MAY

RESULT.

AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended. The likelihood of injury occurring from the use of this product increases when winds are gusty, as wind velocity increases, when wind direction is constantly changing or when there are other meteorological conditions that favor spray drift. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or fine particles (mist) that are likely to drift. AVOID APPLYING AT EXCESSIVE SPEED OR PRESSURE.

NOTE: Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences.

MIXING
Clean sprayer parts immediately after using this product by thoroughly flushing with water.

NOTE: REDUCED RESULTS MAY OCCUR IF WATER CONTAINING SOIL IS USED, SUCH AS VISIBLY MUDDY WATER OR WATER FROM PONDS AND DITCHES THAT IS NOT CLEAR.

Mixing with Water
This product mixes readily with water. Mix spray solution of this product as follows: Fill the mixing or spray tank with the required amount of water. Add the recommended amount of this product near the end of the filling process and mix well. Use caution to avoid siphoning back into the carrier source. Use approved anti-back siphoning devices where required by state or local regulations. During mixing and application, foaming of the spray solution may occur. To prevent or minimize foam, avoid the use of mechanical agitators, terminate by-pass and return lines at the bottom of the tank and, if needed, use an approved anti-foam or defoaming agent.

Tank Mixing Procedure
When tank mixing, read and carefully observe label directions, cautionary statements and all information on the labels of all products used. Add the tank-mix product to the tank as directed by the label. Maintain agitation and add the recommended amount of this product.

Maintain good agitation at all times until the contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation may be required to resuspend the mixture before spraying is resumed.

Keep by-pass line on or near the bottom of the tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh.

Always predetermine the compatibility of labeled tank mixtures of this product with water carrier by mixing small proportional quantities in advance.

Refer to the TANK MIXING section of GENERAL INFORMATION for additional precautions.

Mixing for Hand-Held Sprayers
Prepare the desired volume of spray solution by mixing the amount of this product in water as shown in the following table:

Spray Solution

Desired Volume	Amount of Glyfos X-TRA ½%	1%	1 ½%	2%	5%	10%
1 gal	2/3 oz.	1-1/3 oz.	2 oz.	2-2/3 oz.	6-1/2 oz.	13 oz.

25 gal	1 pt	1 qt	1-1/2 qt	2 qt	5 qt	10 qt
100 gal	2 qt	1 gal	1-1/2 gal	2 gal	5 gal	10 gal

2 tablespoons = 1 fluid ounce

For use in backpack, knapsack or pump-up sprayers, it is suggested that the recommended amount of this product be mixed with water in a larger container. Fill sprayer with the mixed solution.

Colorants or Dyes
Agriculturally approved colorants or marking dyes may be added to this product. Colorants or dyes used in spray solutions of this product may reduce performance, especially at lower rates or dilution. Use colorants or dyes according to the manufacturer's recommendations. instructions

APPLICATION EQUIPMENT AND TECHNIQUES

Do not apply this product through any type of irrigation system.

APPLY THESE SPRAY SOLUTIONS IN PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING DESIRED VOLUMES.

SPRAY DRIFT MANAGEMENT

AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

AERIAL SPRAY DRIFT MANAGEMENT

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outermost nozzles on the boom must not exceed ¾ the length of the wingspan or rotor.

2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they should be observed.

Importance of droplet size
The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see the **Wind, Temperature and Humidity,** and **Temperature Inversion** sections of this label).

Controlling droplet size
- **Volume:** Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with the higher rated flows produce larger droplets.

- **Pressure:** Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are

needed, use higher flow rate nozzles instead of increasing pressure.

- **Number of nozzles:** Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle orientation:** Orienting nozzles so that the spray is released backwards, parallel to the airstream, will produce larger droplets than other orientations. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- **Nozzle type:** Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce larger droplets than other nozzle types.
- **Boom Length:** For some use patterns, reducing the effective boom length to less than ¾ of the wingspan or rotor length may further reduce drift without reducing the swath width.
- **Application Height:** Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces the exposure of the droplets to evaporation and wind.

Swath Adjustment
When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller droplets, etc.)

Wind
Drift potential is lowest between wind speeds of 2 to 10 miles per hour. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 miles per hour due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

Temperature and Humidity
When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions
Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicated good vertical air mixing.

Sensitive Areas
This product should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

Aerial Equipment
DO NOT APPLY THIS PRODUCT USING AERIAL SPRAY EQUIPMENT EXCEPT UNDER CONDITIONS AS SPECIFIED WITHIN THIS LABEL.

This product plus dicamba tank mixtures may not be applied by air in California.

TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Avoid direct application to any body of water.

Use the recommended rates of this herbicide in 3 to 25 gallons of water per acre. specified rate

Drift control additives may be used. When a drift control additive is used, read and carefully observe the cautionary statements and all other information appearing on the additive label.

Ensure uniform application – To avoid streaked, uneven or overlapped application, use appropriate marking devices.

PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. The maintenance of an organic coating (paint) which meets aerospace specification MIL-C-38413 may prevent corrosion. To prevent corrosion of exposed parts, thoroughly wash aircraft after each day of spraying to remove residues of this product accumulated during spraying or from spills. Landing gear is most susceptible.

AERIAL APPLICATIONS IN CALIFORNIA
Aerial applications of this product are allowed in the following situations:

1. Prior to the emergence or transplanting of labeled crops.
2. Aid to burning for establishment and maintenance of fuel breaks.
3. Establishing fire perimeters and black lines.
4. Aid to prescribed burning.
5. Along fire roads.
6. Range conversion.
7. Habitat restoration and management.
8. Wildlife food plots.

Apply 1 to 5 quarts of this product in 5 to 15 gallons of water per acre using aerial (helicopter only) applications.

To broaden the spectrum of control, Garlon 4 may be tank mixed with this product at the rate of 0.5 to 2 quarts per acre. The rate of Garlon should not exceed ½ the rate of this product (e.g. 1 quart of Garlon to 2 quarts of this product) for best results.

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

AVOID DRIFT – DO NOT APPLY WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITION WHICH WILL ALLOW DRIFT. DRIFT MAY CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH TREATMENT IS NOT INTENDED. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Use the following guidelines when aerial applications are made near crops or desirable perennial vegetation after bud break and before total leaf drop, and/or near other desirable vegetation or annual crops.

1. Do not apply within 100 feet of any desirable vegetation or crop(s).
2. If wind up to 5 miles per hour is blowing toward desirable vegetation or crop(s), do not apply within a minimum of 500 feet of the desirable vegetation or crop(s).
3. Winds blowing from 5 to 10 miles per hour toward desirable vegetation or crop(s) may require buffer zones in excess of 500 feet.
4. Do not apply when winds are in excess of 10 miles per hour or when inversion conditions exist.
5. APPLY BY AIR ONLY TO NONRESIDENTIAL AREAS.

specified rates

Ground Broadcast Equipment
Use the recommended rates of this product in 3 to 40 gallons of water per acre as a broadcast spray unless otherwise specified. As density of weeds increases, spray volume should be increased within the recommended range to ensure complete coverage. Carefully select proper nozzles to avoid spraying a fine mist. For best results with ground application equipment, use flat-fan nozzles. Check for even distribution of spray droplets.

Hand-Held or High-Volume Equipment
Apply to foliage of vegetation to be controlled. For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff. Use coarse sprays only.

For control of weeds listed in the **ANNUAL WEEDS** section of **WEEDS CONTROLLED**, apply a ½ percent solution of this product to weeds less than 6 inches in height or runner length. For annual weeds over 6 inches tall, or unless otherwise specified, use a 1 percent solution. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds.

For best results, use a 2 percent solution on harder-to-control perennials, such as Bermudagrass, dock, field bindweed, hemp dogbane, milkweed and Canada thistle.

For low volume directed spray applications, use a 5 to 10 percent solution of this product for control or partial control of annual weeds, perennial weeds or woody brush and trees. Spray coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one half of the plant is important for best results. To ensure adequate spray coverage, spray both sides of large or tall woody brush and trees, when foliage is thick and dense, or where there are multiple sprouts.

Selective Equipment
This product may be applied through recirculating spray systems, shielded applicators, hooded sprayers, wiper applicators or sponge bars, after dilution and thorough mixing with water, to listed weeds growing in any non-crop site specified on this label.

A recirculating spray system directs the spray solution onto weeds growing above desirable vegetation, while spray solution not intercepted by weeds is collected and returned to the spray tank for reuse.

AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION, AS SERIOUS INJURY OR DEATH IS LIKELY TO OCCUR.

Applicators used above desired vegetation should be adjusted so that the lowest spray stream or wiper contact point is at least 2 inches above the desirable vegetation. Droplets, mist, foam or splatter of the herbicide solution settling on desirable vegetation is likely to result in discoloration, stunting or destruction.

Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. This may occur in dense clumps, severe infestations or when the height of the weeds varies so that not all weeds are contacted. In these instances, repeat treatment may be necessary.

Shielded and Hooded Applicators
A shielded or hooded applicator directs the herbicide solution onto weeds, while shielding desirable vegetation from the herbicide. Use nozzles that provide uniform coverage within the treated area. Keep shields on these sprayers adjusted to protect desirable vegetation. EXTREME CARE MUST BE EXERCISED TO AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

Wiper Applicators and Sponge Bars
A wiper or sponge applicator applies the herbicide solution onto weeds by rubbing the weed with an absorbent material containing the herbicide solution. Equipment must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation. Operate this equipment at ground speeds no greater than 5 miles per hour. Performance may be improved by reducing speed in

areas of heavy weed infestations to ensure adequate wiper saturation. Better results may be obtained if 2 applications are made in opposite directions.

Avoid leakage or dripping onto desirable vegetation. Adjust height of applicator to ensure adequate contact with weeds. Keep wiping surfaces clean. Be aware that, on sloping ground, the herbicide solution may migrate, causing dripping on the lower end and drying of the wicks on the upper end of a wiper applicator.

Do not use wiper equipment when weeds are wet.

Mix only the amount of solution to be used during a 1-day period, as reduced activity may result from use of leftover solutions. Clean wiper parts immediately after using this product by thoroughly flushing with water.

For Rope or Sponge Wick Applicators – Solutions ranging from 33 to 75 percent of this product in water may be used.

For Panel Applicators and pressure-feed systems – Solutions ranging from 33 to 100 percent of this product in water may be used.

When applied as directed recommended above, this product CONTROLS the following weeds:

Corn, volunteer	Sicklepod
Panicum, Texas	Spanishneedles
Rye, common	Starbur, bristly
Shattercane	

When applied as directed recommended above, this product SUPPRESSES the following weeds:

Beggarweed, Florida	Ragweed, common
Bermudagrass	Ragweed, giant
Dogbane, hemp	Smutgrass
Dogfennel	Sunflower
Guineagrass	Thistle, Canada
Johnsongrass	Thistle, musk
Milkweed	Vaseygrass
Nightshade, silverleaf	Velvetleaf
Pigweed, redroot	

Injection Systems
This product may be used in aerial or ground injection spray systems. It may be used as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix this product with the undiluted concentrate of other products when using injection systems unless specifically recommended. specified on this label

CDA Equipment amount specified
The rate of this product applied per acre by controlled droplet application (CDA) equipment must not be less than the amount recommended in this label when applied by conventional broadcast equipment. For vehicle-mounted CDA equipment, apply 2 to 15 gallons of water per acre.

CDA equipment produces a spray pattern that is not easily visible. Extreme care must be exercised to avoid spray or drift contacting the foliage or any other green tissue of desirable vegetation, as damage or destruction is likely to result.

SITE AND USE RECOMMENDATIONS Instructions

Detailed instructions follow alphabetically, by site.

Unless otherwise specified, applications may be made to control any weeds listed in the annual, perennial and woody brush tables. Refer also to the **SELECTIVE EQUIPMENT** section.

Cut Stumps

Cut stump treatments may be made on any site listed on this label. This product will control many types of woody brush and tree species, some of which are listed below. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 50 to 100 percent solution of this product to the freshly-cut surface immediately after cutting. Delays in application may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

Alder	Saltcedar
Eucalyptus	Sweetgum
Madrone	Tan oak
Oak	Willow
Reed, giant	

DO NOT MAKE CUT STUMP APPLICATIONS WHEN THE ROOTS OF DESIRABLE WOODY BRUSH OR TREES MAY BE GRAFTED TO THE ROOTS OF THE CUT STUMPS. Some sprouts, stems, or trees may share the same root system. Adjacent trees having a similar age, height and spacing may signal shared roots. Whether grafted or shared, injury is likely to occur to non-treated stems/trees when one or more trees sharing commons roots are treated.

Forestry Site Preparation

This product is recommended for the control or partial control of woody brush, trees and herbaceous weeds in forestry. This product is also recommended for use in preparing or establishing wildlife openings within these sites and maintaining logging roads.

This product is recommended for use in site preparation prior to planting any tree species, including Christmas trees, eucalyptus, hybrid tree cultivars and silvicultural nursery sites.

APPLICATION RATES AND TIMING

APPLICATION	GLYFOS X-TRA	SPRAY VOLUME GAL/A
BROADCAST		
Aerial	2 to 10 qts/a	5 to 30
Ground	2 to 10 qts/a	10 to 60
SPRAY-TO-WET		
Handgun	¾% to 2%	spray-to-wet
Backpack	by volume	
LOW VOLUME DIRECTED SPRAY		
Handgun	5% to 10%	partial coverage*
Backpack	by volume	

*For low volume directed spray applications, coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one-half of the plant is important for best results.

Use higher rates of this product within the recommended range for control or partial control of woody brush, trees and hard-to-control perennial herbaceous weeds. For best results, apply to actively growing woody brush and trees after full leaf expansion and before fall color and leaf drop. Increase rates within the recommended range for control of perennial herbaceous weeds any time after emergence and before seedheads, flowers or berries appear.

Use the lower rates of this product within the recommended range for control of annual herbaceous weeds and actively growing perennial herbaceous weeds after seedheads, flowers or berries appear.

Apply to the foliage of actively growing annual herbaceous weeds any time after emergence.

This product has no herbicidal or residual activity in the soil. Where repeat applications are necessary, do not exceed 10.6 quarts of this product per acre per year.

Tank Mixtures
Tank mixtures of this product may be used to increase the spectrum of vegetation controlled. When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements for each product in the mixture.

NOTE: For forestry site preparation, make sure the tank mix product is approved for use prior to planting the desired species. Observe planting interval restrictions.

Any recommended rate of this product may be used in a tank mix with the following products for forestry site preparation.

PRODUCT	BROADCAST RATE
Arsenal Applicators Concentrate	2 to 16 fl oz/a
Escort™	½ to 3 ½ oz/a
Chopper™	4 to 32 fl oz/a
Garlon 4	1 to 4 qts/a
Oust™	1 to 4 oz/a

PRODUCT	SPRAY-TO-WET RATES
Arsenal Applicators Concentrate	1/32 % to ½ % by volume

PRODUCT	LOW VOLUME DIRECTED SPRAY RATES
Arsenal Applicators Concentrate	1/8 % to ½ % by volume

For control of herbaceous weeds, use the lower recommended tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher recommended rates.

Do not apply this product as an over-the-top broadcast spray for forestry conifer or hardwood release.

General Non-crop Areas and Industrial Sites
Use in areas such as airports, apartment complexes, Christmas tree farms, ditch banks, dry ditches, dry canals, fencerows, golf courses, industrial sites, lumber yards, manufacturing sites, office complexes, ornamental nurseries, parks, parking areas, petroleum tank farms and pumping installations, railroads, recreational areas, residential areas, roadsides, sod or turf seed farms, schools, storage areas, substations, warehouse areas, other public areas, and similar industrial and non-crop sites.

General Weed Control, Trim-and-Edge, Bare Ground
This product may be used in general non-crop areas. It may be applied with any application equipment described in this label. This product may be used to trim-and-edge around objects in non-crop sites, for spot treatment of unwanted vegetation and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product may be used prior to planting an area to ornamentals, flowers, turfgrass (sod or seed), or prior to laying asphalt or beginning construction projects.

Repeated applications of this product may be used, as weeds emerge, to maintain bare ground.

This product may be tank mixed with the following products. Refer to these products' labels for approved non-crop sites and application rates. The individual tank mix product must be registered for use on this site.

Arsenal™
Clarity
Barricade™ 65WG
Diuron
Endurance™
Escort™
Garlon™ 3A
Garlon 4
Karmex™ DF
Krovar™ I DF
Manage®
Oust
Pendulum™ 3.3 EC
Pendulum WDG
Plateau™
Princep™ DF
Princep™ Liquid
Ronstar™ 50WP
Sahara™
Simazine
Surflan™
Telar™
Vanquish™
2,4-D

This product plus dicamba tank mixtures may not be applied by air in California.

When applied as a tank mixture for bare ground, this product provides control of the emerged annual weeds and control or partial control of emerged perennial weeds, woody brush and trees.

For control or partial control of the following perennial weeds, apply 1 to 2 quarts of this product plus 2 to 4 ounces of Oust per acre.

Bahiagrass
Bermudagrass
Broomsedge
Dallisgrass
Dock, curly
Dogfennel
Fescue, tall
Johnsongrass
Poorjoe
Quackgrass
Vaseygrass
Vervain, blue

Chemical Mowing – Perennials
This product will suppress perennial grasses listed in this section to serve as a substitute for mowing. Use 8 fluid ounces of this product per acre when treating tall fescue, fine fescue, orchardgrass, quackgrass or reed canarygrass covers. Use 6 fluid ounces of this product per acre when treating Kentucky bluegrass. Apply treatments in 10 to 40 gallons of spray solution per acre.

Use only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

Chemical Mowing – Annuals
For growth suppression of some annual grasses, such as annual ryegrass, wild barley and wild oats growing in coarse turf on roadsides or other industrial areas, apply 4 to 5 fluid ounces of this product in 10 to 40 gallons of spray solution per acre. Applications should be made when annual grasses are actively growing and before the seedheads are in the boot stage of development. Treatments may cause injury to the desired grasses.

***Bromus* Species and Medusahead in Pastures and Rangelands**
***Bromus* species.** This product may be used to treat downy brome (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), soft chess (*Bromus mollis*) and cheatgrass (*Bromus secalinus*) found in industrial, rangeland and pasture sites. Apply 8 to 16 fluid ounces of this product per acre on a broadcast basis.

For best results, treatment should coincide with early seedhead emergence of the most mature plants. Delaying the application until this growth stage will maximize the emergence of other weedy grass flushes. Applications should be made to the same site each year until seed banks are depleted and the

desirable perennial grasses can become reestablished on this site.

Medusahead. To treat medusahead, apply 16 fluid ounces of this product per acre as soon as plants are actively growing, and prior to the 4-leaf stage. Applications may be made in the fall or spring.

Applications to brome and medusahead may be made using ground or aerial equipment. Aerial applications for these uses may be made using fixed wing or helicopter equipment. For aerial applications, apply in 2 to 10 gallons of water per acre. For applications using ground equipment, apply in 10 to 20 gallons of water per acre. When applied as directed in this label, there are no grazing restrictions.

Dormant Turfgrass
This product may be used to control or suppress many winter annual weeds and tall fescue for effective release of dormant Bermudagrass and bahiagrass turf. Treat only when turf is dormant and prior to spring greenup.

specified rates

Apply 8 to 64 fluid ounces of this product per acre. Apply the recommended rates in 10 to 40 gallons of water per acre. Use only in areas where Bermudagrass or bahiagrass are desirable ground covers and where some temporary injury or discoloration can be tolerated.

Treatments in excess of 16 fluid ounces per acre may result in injury or delayed greenup in highly maintained areas, such as golf courses and lawns. DO NOT apply tank mixtures of this product plus Oust in highly maintained turfgrass areas. For further uses, refer to the **ROADSIDES** section of this label, which gives rates for dormant Bermudagrass and bahiagrass treatments.

Actively Growing Bermudagrass
This product may be used to control or partially control many annual and perennial weeds for effective release of actively growing Bermudagrass. DO NOT apply more than 16 fluid ounces of this product per acre in highly maintained turfgrass areas. DO NOT apply tank mixtures of this product plus Oust in highly maintained turfgrass areas. For further uses, refer to the **ROADSIDES** section of this label, which gives rates for actively growing Bermudagrass treatments. Use only in areas where some temporary injury or discoloration can be tolerated.

Turfgrass Renovation, Seed or Sod Production
This product controls most existing vegetation prior to renovating turfgrass areas or establishing turfgrass grown for seed or sod. For maximum control of existing vegetation, delay planting or sodding to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm-season grasses such as Bermudagrass, summer or fall applications provide the best control. Where existing vegetation is growing under mowed turfgrass management, apply this product after omitting at least one regular mowing to allow sufficient growth for good interception of the spray.

Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring or slicing should be delayed for 7 days after application to allow translocation into underground plant parts.

Desirable turfgrasses may be planted following the above procedures.

Hand-held equipment may be used for spot treatment of unwanted vegetation growing in existing turfgrass. Broadcast or hand-held equipment may be used to control sod remnants or other unwanted vegetation after sod is harvested.

If application rates total 3 quarts per acre or less, no waiting period between treatment and feeding or livestock grazing is required. If the rate is greater than 3 quarts per acre, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Habitat Management
Habitat Restoration and Management

This product may be used to control exotic and other undesirable vegetation in habitat management and natural areas, including rangeland and wildlife refuges. Applications can be made to allow recovery of native plant species, prior to planting desirable native species, and for similar broad spectrum vegetation control requirements. Spot treatments can be made to selectively remove unwanted plants for habitat management and enhancement.

Wildlife Food Plots
This product may be used as a site preparation treatment prior to planting wildlife food plots. Any wildlife food species may be planted after applying this product, or native species may be allowed to repopulate the area. If tillage is needed to prepare a seedbed, wait 7 days after application before tillage to allow translocation into underground plant parts.

Injection and Frill (Woody Brush and Trees)
This product may be used to control woody brush and trees by injection or frill applications. Apply this product using suitable equipment that must penetrate into the living tissue. Apply the equivalent of 1/25 fluid ounce (1 mL) of this product per each 2 to 3 inches of trunk diameter at breast height (DBH). This is best achieved by applying a 50 to 100 percent concentration of this product either to a continuous frill around the tree or as cuts evenly spaced around the tree below all branches. As tree diameter increases in size, better results are achieved by applying diluted material to a continuous frill or more closely spaced cuttings. Avoid application techniques that allow runoff to occur from frilled or cut areas in species that exude sap freely. In species such as this, make the frill or cuts at an oblique angle to produce a cupping effect and use a 100 percent concentration of this product. For best results, application should be made during periods of active growth and after full leaf expansion. This product will control many species, some of which are listed below:

Control	Partial Control
Oak	Black gum
Poplar	Dogwood
Sweetgum	Hickory
Sycamore	Maple, red

Ornamentals, Plant Nurseries and Christmas Trees
Post-Directed, Trim-and-Edge
This product may be used as a post-directed spray around established woody ornamental species such as arborvitae, azalea, boxwood, crabapple, eucalyptus, euonymus, fir, douglas fir, jojoba, hollies, lilac, magnolia, maple, oak, poplar, privet, pine, spruce and yew. This product may also be used to trim and edge around trees, buildings, sidewalks and roads, potted plants and other objects in a nursery setting.

Desirable plants may be protected from the spray solution by using shields or coverings made of cardboard or other impermeable material. THIS PRODUCT IS NOT RECOMMENDED FOR USE AS AN OVER-THE-TOP BROADCAST SPRAY IN ORNAMENTALS AND CHRISTMAS TREES. Care must be exercised to avoid contact of spray, drift or mist with foliage or green bark of established ornamental species.

Site Preparation
This product may be used prior to planting any ornamental, nursery or Christmas tree species.

Wiper Applications
This product may be used through wick or other suitable wiper applicators to control or partially control undesirable vegetation around established eucalyptus or poplar trees. See the SELECTIVE EQUIPMENT section of this label for further information about the proper use of wiper applicators.

Greenhouse / Shadehouse
This product may be used to control weeds growing in and around greenhouses and shadehouses. Desirable vegetation must not be present during application and air circulation fans must be turned off.

Parks, Recreational and Residential Areas

This product may be used in parks, recreational and residential areas. It may be applied with any application equipment described in this label. This product may be used to trim-and-edge around trees, fences, and paths, around buildings, sidewalks, and other objects in these areas. This product may be used for spot treatment of unwanted vegetation. This product may be used to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product may be used prior to planting an area to ornamentals, flowers, turfgrass (sod or seed), or prior to laying asphalt or beginning construction projects.

All of the instructions in the **GENERAL NON-CROP AREAS AND INDUSTRIAL SITES** section apply to park and recreational areas.

Railroads

All of the instructions in the **GENERAL NON-CROP AREAS AND INDUSTRIAL SITES** section apply to railroads.

Bare ground, Ballast and Shoulders, Crossings and Spot Treatment

This product may be used to maintain bare ground on railroad ballast and shoulders. Repeat applications of this product may be used, as weeds emerge, to maintain bare ground. This product may be used to control tall-growing weeds to improve line-of-sight at railroad crossings and reduce the need for mowing along rights-of-way. For crossing applications, up to 80 gallons of spray solution per acre may be used. This product may be tank mixed with the following products for ballast, shoulder, spot, bare ground and crossing treatments:

Arsenal	Krovar I DF
Clarity	Oust
Diuron	Sahara
Escort	Spike™
Garlon 3A	Telar
Garlon 4	Vanquish
Hyvar™ X	2,4-D

The individual tank mix product must be registered for use on this site.

Brush Control

This product may be used to control woody brush and trees on railroad rights-of-way. Apply 4 to 10 quarts of this product per acre as a broadcast spray, using boom-type or boomless nozzles. Up to 80 gallons of spray solution per acre may be used. Apply a ¾ to 2 percent solution of this product when using high-volume spray-to-wet applications. Apply a 5 to 10 percent solution of this product when using low volume directed sprays for spot treatment. This product may be mixed with the following products for enhanced control of woody brush and trees:

Arsenal	Garlon 4
Escort	Tordon™ K
Garlon 3A	

Bermudagrass Release

This product may be used to control or partially control many annual and perennial weeds for effective release of actively growing Bermudagrass. Apply 1 to 3 pints of this product in up to 80 gallons of spray solution per acre. Use the lower rate when treating annual weeds below 6 inches in height (or runner length). Use the higher rate as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Johnsongrass
Bluestem, silver	Trumpetcreeper
Fescue, tall	Vaseygrass

This product may be tank-mixed with Oust. If tank-mixed, use no more than 1 to 3 pints of this product with 1 to 2 ounces of Oust per acre. Use the lower rates of each product to control annual weeds less

than 6 inches in height (or runner length) that are listed in this label and the Oust label. Use the higher rates as annual weeds increase in size and approach the flower or seedhead stages. These rates will also provide partial control of the following perennial weeds:

Bahiagrass	Fescue, tall
Blackberry	Johnsongrass
Bluestem, silver	Poorjoe
Broomsedge	Raspberry
Dallisgrass	Trumpetcreeper
Dewberry	Vaseygrass
Dock, curly	Vervain, blue
Dogfennel	

Use only on well-established Bermudagrass. Bermudagrass injury may result from the treatment, but regrowth will occur under moist conditions. Repeat applications in the same season are not recommended, since severe injury may occur.

Roadsides
All of the instructions in the **GENERAL NON-CROP AREAS AND INDUSTRIAL SITES** section apply to roadsides.

Shoulder Treatments
This product may be used on road shoulders. It may be applied with boom sprayers, shielded boom sprayers, high-volume off-center nozzles, hand-held equipment, and similar equipment.

Guardrails and Other Obstacles to Mowing
This product may be used to control weeds growing under guardrails and around signposts and other objects along the roadside.

Spot Treatment
This product may be used as a spot treatment to control unwanted vegetation growing along roadsides.

Tank Mixtures
This product may be tank-mixed with the following products for shoulder, guardrail, spot and bare ground treatments:

Clarity	Princep Liquid
Diuron	Ronstar 50WP
Endurance	Sahara
Escort	Simazine
Krovar I DF	Surflan
Oust	Telar
Pendulum 3.3 EC	Vanquish
Pendulum WDG	2,4-D
Princep DF	

The individual tank mix product must be registered for use on this site.

See the **GENERAL NON-CROP AREAS AND INDUSTRIAL SITES** section of this label for general instructions for tank mixing.

Release of Bermudagrass or Bahiagrass

Dormant Applications
This product may be used to control or partially control many winter annual weeds and tall fescue for effective release of dormant Bermudagrass or bahiagrass. Treat only when turf is dormant and prior to spring greenup. This product may also be tank-mixed with Oust for residual control. Tank mixtures of

this product with Oust may delay greenup.

For best results on winter annuals, treat when plants are in an early growth stage (below 6 inches in height) after most have germinated. For best results on tall fescue, treat when fescue is at or beyond the 4- to 6-leaf stage.

Apply 8 to 64 fluid ounces of this product per acre alone or in a tank mixture with ¼ to 1 ounce per acre of Oust. Apply the recommended rates in 10 to 40 gallons of water per acre. Use only in areas where Bermudagrass or bahiagrass are desirable ground covers and where some temporary injury or discoloration can be tolerated. To avoid delays in greenup and minimize injury, add no more than 1 ounce of Oust per acre on Bermudagrass and no more than ½ ounce of Oust per acre on bahiagrass and avoid treatments when these grasses are in a semi-dormant condition.

Actively Growing Bermudagrass
This product may be used to control or partially control many annual and perennial weeds for effective release of actively growing Bermudagrass. Apply 1 to 3 pints of this product in 10 to 40 gallons of spray solution per acre. Use the lower rate when treating annual weeds below 6 inches in height (or runner length). Use the higher rate as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Johnsongrass
Bluestem, silver	Trumpetcreeper
Fescue, tall	Vaseygrass

This product may be tank-mixed with Oust. If tank-mixed, use no more than 1 to 2 pints of this product with 1 to 2 ounces of Oust per acre. Use the lower rates of each product to control annual weeds less than 6 inches in height (or runner length) that are listed in this label and the Oust label. Use the higher rates as annual weeds increase in size and approach the flower or seedhead stages. These rates will also provide partial control of the following perennial weeds:

Bahiagrass	Fescue, tall
Bluestem, silver	Johnsongrass
Broomsedge	Poorjoe
Dallisgrass	Trumpetcreeper
Dock, curly	Vaseygrass
Dogfennel	Vervain, blue

Use only on well-established Bermudagrass. Bermudagrass injury may result from the treatment, but regrowth will occur under moist conditions. Repeat applications of the tank mix in the same season are not recommended, since severe injury may occur.

Actively Growing Bahiagrass
For suppression of vegetative growth and seedhead inhibition of bahiagrass for approximately 45 days, apply 6 fluid ounces of this product in 10 to 40 gallons of water per acre. Apply 1 to 2 weeks after full greenup or after mowing to a uniform height of 3 to 4 inches. This application must be made prior to seedhead emergence.

For suppression up to 120 days, apply 4 fluid ounces of this product per acre, followed by an application of 2 to 4 fluid ounces per acre about 45 days later. Make no more than 2 applications per year.

A tank mixture of this product plus Oust may be used. Apply 6 fluid ounces of this product plus ¼ ounce of Oust per acre 1 to 2 weeks following an initial spring mowing. Make only one application per year.

Utility Sites
In utilities, this product is recommended for use along electrical power, pipeline and telephone rights-of-way, and in other sites associated with these rights-of-way, such as substations, roadsides, railroads, or similar rights-of-way that run in conjunction with utilities.

This product is also recommended for use in preparing or establishing wildlife openings within these sites, maintaining access roads and for side trimming along utility rights-of-way.

Tank Mixtures
Tank mixtures of this product may be used to increase the spectrum of control for herbaceous weeds, woody brush and trees. When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of all products used. Use according to the most restrictive precautionary statements for each product in the mixture. Any recommended rate of this product may be used in a tank mix.

For control of herbaceous weeds, use the lower recommended tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher recommended rates.

NOTE: For side trimming treatments, it is recommended that this product be used alone or in tank mixture with Garlon 4.

PRODUCT	BROADCAST RATE	USE SITES
Arsenal 2WSL	6 to 32 fl oz/acre	Utility Sites
Escort	1 to 2 oz/acre	Utility Sites
Garlon 3A*, Garlon 4	1 to 4 qts/acre	Utility Sites/ Side Trimming
Oust	1 to 4 oz/acre	Utility Sites

PRODUCT	SPRAY-TO-WET RATES	USE SITES
Arsenal 2WSL	1/16% to ½% by volume	Utility Sites
Escort	1 to 2 oz/acre	Utility Sites

PRODUCT	LOW VOLUME DIRECTED SPRAY RATES	USE SITES
Arsenal 2WSL	1/8% to ½% by volume	Utility Sites
Escort	1 to 2 oz/acre	Utility Sites

*Ensure that Garlon 3A is thoroughly mixed with water according to label directions before adding this product. Have spray mixture agitating at the time this product is added to avoid spray compatibility problems.

Bare Ground and Trim-and-Edge
This product may be used in utility sites and substations for bare ground, trim-and-edge around objects, spot treatment of unwanted vegetation and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. This product may be used prior to planting a utility site to ornamentals, flowers, turfgrass (sod or seed), or beginning construction projects.

Repeated applications of this product may be used, as weeds emerge, to maintain bare ground.

This product may be tank mixed with the following products. Refer to these products' labels for approved noncrop sites and application rates. The individual tank mix product must be registered for use on this site.

Arsenal
Banvel
Barricade™ 65WG
Diuron
Endurance™
Escort
Garlon 3A
Plateau™
Princep™ DF
Princep™ Liquid
Ronstar™ 50WP
Sahara™
Simazine
Surflan™

WEEDS CONTROLLED

Always use the higher rate of this product per acre within the recommended range when weed growth is heavy or dense or weeds are growing in an undisturbed (noncultivated) area.

Reduced results may occur when treating weeds heavily covered with dust. For weeds that have been mowed, grazed or cut, allow regrowth to occur prior to treatment.

Refer to the following label sections for recommended rates for the control of annual and perennial weeds and woody brush and trees. For difficult to control perennial weeds and woody brush and trees, where plants are growing under stressed conditions, or where infestations are dense, this product may be used at 5 to 10 quarts per acre for enhanced results.

Annual Weeds

Use 1 quart per acre if weeds are less than 6 inches in height or runner length and 1.5 quarts to 4 quarts per acre if weeds are over 6 inches in height or runner length or when weeds are growing under stressed conditions.

For spray-to-wet applications, apply a ½ percent solution of this product to weeds less than 6 inches in height or runner length. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds. For annual weeds over 6 inches tall, or for smaller weeds growing under stressed conditions, use a 1 to 2 percent solution. Use the higher rate for tough-to-control species or for weeds over 24 inches tall.

WEED SPECIES
Annoda, spurred
Barley*
Barnyardgrass*
Bittercress*
Black nightshade*
Bluegrass, annual*
Bluegrass, bulbous*
Bassia, fivehook
Brome, downy*
Brome, Japanese*
Browntop panicum*
Buttercup*
Carolina foxtail*
Carolina geranium
Castor bean
Cheatgrass*
Cheeseweed (*Malva parviflora*)
Chervil*
Chickweed*
Cocklebur*
Copperleaf, hophornbeam
Corn*
Corn speedwell*
Crabgrass*
Dwarfdandelion*
Eastern mannagrass*

Eclipta*
Fall panicum*
Falsedandelion*
Falseflax, smallseed*
Fiddleneck
Field pennycress*
Filaree
Fleabane, annual*
Fleabane, hairy (*Conyza bonariensis*)*
Fleabane, rough*
Florida pusley
Foxtail*
Goatgrass, jointed*
Goosegrass
Grain sorghum (milo)*
Groundsel, common*
Hemp sesbania
Henbit
Horseweed/Marestail (*Conyza canadensis)*
Itchgrass*
Johnsongrass, seedling
Junglerice
Knotweed
Kochia
Lambsquarters*
Little barley*
London rocket*
Mayweed
Medusahead*
Morningglory (*Ipomoea spp*)
Mustard, blue*
Mustard, tansy*
Mustard, tumble*
Mustard, wild*
Oats
Pigweed*
Plains/Tickseed coreopsis*
Prickly lettuce*
Puncturevine
Purslane, common
Ragweed, common*
Ragweed, giant
Red rice
Russian thistle
Rye*
Ryegrass*
Sandbur, field*
Shattercane*
Shepherd's purse*
Sicklepod
Signalgrass, broadleaf*
Smartweed, ladysthumb*
Smartweed, Pennsylvania*
Sowthistle, annual
Spanishneedles
Speedwell, purslane*
Sprangletop*
Spurge, annual

Spurge, prostrate*
Spurge, spotted*
Spurry, umbrella*
Starthistle, yellow
Stinkgrass*
Sunflower*
Teaweed/Prickly sida
Texas panicum*
Velvetleaf
Virginia copperleaf
Virginia pepperweed*
Wheat*
Wild oats*
Witchgrass*
Woolly cupgrass*
Yellow rocket

*When using field broadcast equipment (aerial applications or boom sprayers using flat-fan nozzles) these species will be controlled or partially controlled using 1 pint of this product per acre. Applications must be made using 3 to 10 gallons of carrier volume per acre. Use nozzles that ensure thorough coverage of foliage and treat when weeds are in an early growth stage.

Perennial Weeds
Best results are obtained when perennial weeds are treated after they reach the reproductive stage of growth (seedhead initiation in grasses and bud formation in broadleaves). For non-flowering plants, best results are obtained when the plants reach a mature stage of growth. In many situations, treatments are required prior to these growth stages. Under these conditions, use higher application rate within the recommended range.

Ensure thorough coverage when using spray-to-wet treatments using hand-held equipment. When using hand-held equipment for low volume directed spot treatments, apply a 5 to 10 percent solution of this product.

Allow 7 or more days after application before tillage.

Weed Species	Rate (QT/A)	Hand-Held % Solution
Alfalfa*	1	2
Alligatorweed*	4	1.5
Anise (fennel)	2-4	1-2
Bahiagrass	3-5	2
Beachgrass, European (*Ammophila arenaria*)	-	5
Bentgrass*	1.5	2
Bermudagrass	5	2
Bermudagrass, water (knotgrass)	1.5	2
Bindweed, field	4-5	2
Bluegrass, Kentucky	2	2
Blueweed, Texas	4-5	2
Brackenfern	3-4	1-1.5
Bromegrass, smooth	2	2
Bursage, woolly-leaf	--	2
Canarygrass, reed	2-3	2
Cattail	3-5	2
Clover; red, white	3-5	2
Cogongrass	3-5	2
Dallisgrass	3-5	2
Dandelion	3-5	2

Dock, curly	3-5	2
Dogbane, hemp	4	2
Fescue (except tall)	3-5	2
Fescue, tall	1-3	2
German ivy	2-4	1-2
Guineagrass	3	1
Horsenettle	3-5	2
Horseradish	4	2
Iceplant	2	1.5-2
Jerusalem artichoke	3-5	2
Johnsongrass	2-3	1
Kikuyugrass	2-3	2
Knapweed	4	2
Lantana	--	1-1.25
Lespedeza	3-5	2
Milkweed, common	3	2
Muhly, wirestem	2	2
Mullein, common	3-5	2
Napiergrass	3-5	2
Nightshade, silverleaf	2	2
Nutsedge; purple, yellow	3	1-2
Orchardgrass	2	2
Pampasgrass	3-5	1.5-2
Paragrass	3-5	2
Pepperweed, perennial	4	2
Phragmites*	3-5	1-2
Poison hemlock	2-4	1-2
Quackgrass	2-3	2
Redvine*	2	2
Reed, giant	4-5	2
Ryegrass, perennial	2-3	1
Smartweed, swamp	3-5	2
Spurge, leafy*	--	2
Sweet potato, wild*	--	2
Thistle, artichoke	2-3	1-2
Thistle, Canada	2-3	2
Timothy	2-3	2
Torpedograss*	4-5	2
Trumpetcreeper*	2-3	2
Vaseygrass	3-5	2
Velvetgrass	3-5	2
Wheatgrass, western	2-3	2

*Partial control

Woody Brush and Trees
Apply this product after full leaf expansion, unless otherwise directed. Use the higher rate for larger plants and/or dense areas of growth. On vines, use the higher rate for plants that have reached the woody stage of growth. Best results are obtained when application is made in late summer or fall after fruit formation.

In arid areas, best results are obtained when applications are made in the spring to early summer when brush species are at high moisture content and are flowering.

Ensure thorough coverage when using spray-to-wet treatments using hand-held equipment. When using hand-held equipment for low volume directed-spray spot treatments, apply a 5 to 10 percent solution of this product.

Symptoms may not appear prior to frost or senescence with fall treatments.

Allow 7 or more days after application before tillage, mowing or removal. Repeat treatments may be necessary to control plants regenerating from underground parts or seed. Some autumn colors on undesirable deciduous species are acceptable provided no major leaf drop has occurred. Reduced performance may result if fall treatments are made following a frost.

Weed Species	Broadcast Rate (QT/A)	Hand-Held Spray-to-Wet % Solution
Alder	3-4	1-1.5
Ash*	2-5	1-2
Aspen, quaking	2-3	1-1.5
Bearclover (Bearmat)*	2-5	1-2
Beech*	2-5	1-2
Birch	2	1
Blackberry	3-4	1-1.5
Blackgum	2-5	1-2
Bracken	2-5	1-2
Broom; French, Scotch	2-5	1.5-2
Buckwheat, California*	2-4	1-2
Cascara*	2-5	1-2
Catsclaw*	--	1-1.5
Ceanothus*	2-5	1-2
Chamise*	2-5	1
Cherry; bitter, black, pin	2-3	1-1.5
Coyote brush	3-4	1.5-2
Deerweed	2-5	1
Dogwood*	2-5	1-2
Elderberry	2	1
Elm*	2-5	1-2
Eucalyptus	--	2
Gorse*	2-5	1-2
Hasardia*	2-4	1-2
Hawthorn	2-3	1-1.5
Hazel	2	1
Hickory*	2-5	1-2
Honeysuckle	3-4	1-1.5
Hornbeam, American*	2-5	1-2
Kudzu	4	2
Locust, black*	2-4	1-2
Madrone resprouts*	--	2
Manzanita*	2-5	1-2
Maple, red	2-4	1-1.5
Maple, sugar	--	1-1.5
Monkey flower*	2-4	1-2
Oak; black, white*	2-4	1-2
Oak, post	3-4	1-1.5
Oak; northern, pin	2-4	1-1.5
Oak, Scrub*	2-4	1-1.5
Oak; southern red	2-3	1-1.5
Peppertree, Brazilian (Florida holly)*	2-5	1-2
Persimmon*	2-5	1-2
Pine	2-5	1-2
Poison ivy	4-5	2
Poison oak	4-5	2
Poplar, yellow*	2-5	1-2
Redbud, eastern	2-5	1-2

Rose, multiflora	2	1
Russian olive*	2-5	1-2
Sage, black	2-4	1
Sage, white*	2-4	1-2
Sage brush, California	2-4	1
Salmonberry	2	1
Saltcedar*	2-5	1-2
Sassafras*	2-5	1-2
Sourwood*	2-5	1-2
Sumac; laurel, poison, smooth, sugarbush, winged*	2-4	1-2
Sweetgum	2-3	1-1.5
Swordfern*	2-5	1-2
Tallowtree, Chinese	--	1
Tan oak resprouts*	--	2
Thimbleberry	2	1
Tobacco, tree*	2-4	1-2
Toyon*	--	2
Trumpetcreeper	2-3	1-1.5
Vine maple*	2-5	1-2
Virginia creeper	2-5	1-2
Waxmyrtle, southern*	2-5	1-2
Willow	3	1
Yerbasenta*	--	2

*Partial control

WARRANTY DISCLAIMER

Cheminova warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, CHEMINOVA MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

INHERENT RISKS OF USE

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Cheminova or the Seller. All such risks shall be assumed by Buyer and User. Buyer and User agree to hold Cheminova and the Seller harmless for any claims related to such factors.

LIMITATION OF REMEDIES

To the extent consistent with applicable law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to one of the following, at Cheminova's election:

(1) Refund of purchase price paid by buyer or user for product bought, or

(2) Replacement of amount of product used.

In no case shall Cheminova be liable for consequential, incidental, or special damages or losses.

The terms of the Warranty Disclaimer above and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Cheminova or the Seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

1/9/08

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

File Copy

December 1, 2008

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

PLEASE RETURN A COPY OF THIS LETTER WITH PAYMENT
OR PAY ON-LINE at www.Pay.Gov (See Below for Details)

OPP Decision Number: D-388510
EPA File Symbol or Registration Number: 4787-23
Product Name: GLYFOS X-TRA
EPA Receipt Date: 11-Jan-2008
EPA Company Number: 4787
Company Name: CHEMINOVA A/S

Jennifer DeCarlo
CHEMINOVA INC.
CHEMINOVA A/S
ONE PARK DRIVE, SUITE 150, PO Box 110566
RTP, NC 27709-

SUBJECT: Receipt of Amendment Subject to Registration Service Fee

Dear Registrant:

The Office of Pesticide Programs has received your application for Amendment. If you submitted data with this application, the results of the PRN-86-5 screen will be communicated separately. During the administrative screen, the Office of Pesticide Programs has determined that this Action is subject to a Pesticide Registration Service Fee as defined in the Pesticide Registration Improvement Act.

The Action has been identified as Action Code: R292

APPLICANT-INITIATED 2;AMEND AN ESTABLISHED TOLERANCE (E.G., DECREASE OR INCREASE);DOMESTIC OR IMPORT;

The fee associated with this action is $ 37,300. Payment in the amount of $ 10,880 has been received. Please remit additional payment in the amount of $ 26,420.

By USPS:
USEPA Washington Finance Center
Pesticide Registration Service Fee
PO Box 979074
St. Louis, MO 63197

By Courier:
U.S. Bank
Government Lockbox 979074
1005 Convention Plaza
SL-MO-C2-GL
St. Louis, MO 63197
Tephone: (314) 418-4990

All payments must be in United States currency by check, bank draft, or money order drawn to the order of the Environmental Protection Agency. To ensure proper credit, please write the OPP DECISION NUMBER on your check, and enclose a copy of this letter with your payment.

Effective November 1, 2006, fees may be paid on-line via credit card or electronic fund transfer. To submit a payment on-line, visit www.pay.gov. From the pay.gov home page, select "search by form name." From the next page, select "P," then click on "Pesticide Registration Improvement Act. Fee Payment" and complete the form, making certain to use the decision number and registration number on the invoice you receive from the Pesticide Program in the space provided.

You may be eligible for a partial waiver of the registration service fee if, for example, you qualify as a small business or are applying for a minor use, or if your application is soley associated with an IR-4 tolerance petition. Please be advised that if you intend to request a waiver, you must do so in writing within 15 days of receipt of this invoice instead of remitting the amount indicated above. OPP will not consider waiver requests after the registration service fee has been paid. Information regarding eligibility and how th request and document a fee waiver is available on the OPP Fee for Service web site at www.epa.gov/pesticides/fees.

Please send Registration Service Fee Waiver requests to:

By USPS:
Document Processing Desk (WAIVER)
Office of Pesticide Programs (7504P)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave NW
Washington, DC 20460

By Courier:
Document Processing Desk (WAIVER)
Office of Pesticide Programs (7504P)
U.S. Environmental Protection Agency
Room S-4900 Potomac Yard
2777 S. Crystal Dr.
Arlington, VA

A PRIA decision time review period will not start until a fee waiver is granted and/or the Agency receives certification that the outstanding fee has been paid. If the Agency does not receive certification of payment for this action or a fee waiver request within the next 30 days, the Agency will presume that you no longer want to pursue this action. The Agency will then initiate a process that may result in administrative withdrawal of this action.

If you have any questions, please contact the Pesticide Registration Service Fee Ombudsman, at (703) 305-6249.

Sincerely,

Front End Processing Staff
Information Technology & Resources Management Division

"Jennifer DeCarlo" <jennifer.decarlo@cheminova.com>
12/02/2008 10:23 AM

To Jim Tompkins/DC/USEPA/US@EPA
cc
bcc
Subject RE: FW: Amendment Subject to Registration Service Fee

Hi Jim,

Attached is the pay.gov receipt for $37,300.

Thanks,
Jennifer

-----Original Message-----
From: Tompkins.Jim@epamail.epa.gov [mailto:Tompkins.Jim@epamail.epa.gov]

Sent: Tuesday, December 02, 2008 10:19 AM
To: Jennifer DeCarlo
Subject: Re: FW: Amendment Subject to Registration Service Fee

The $37,500 payment does not show up. If you will send me a copy of the check or PAYGOV email, I will take care of it.

Jim Tompkins
Team Leader 25
Herbicide Branch
Registration Division

Phone 703 305 5697
Fax 703 308 0029
E-mail Tompkins.jim@EPA.GOV

"Jennifer DeCarlo" <jennifer.decarlo@cheminova.com>
12/02/2008 09:46 AM

To Jim Tompkins/DC/USEPA/US@EPA
cc
Subject FW: Amendment Subject to Registration Service Fee

Hi Jim,

I just received this notice yesterday; however, I am not sure what this

is in relation to. For the tolerance petition I submitted in early October, we paid $37,300 + $1,865 (additional money owed), so I believe the full amount has been received for this petition. Is the notice below also in relation to this same petition? The OPP Decision Number is different.

Best regards,
Jennifer

-----Original Message-----
From: DCOPPAPPS01/DC/USEPA/US@epamail.epa.gov
[mailto:DCOPPAPPS01/DC/USEPA/US@epamail.epa.gov) On Behalf Of Pesticide Registration Improvement Act
Sent: Monday, December 01, 2008 4:10 PM
To: Jennifer DeCarlo
Subject: Amendment Subject to Registration Service Fee

December 1, 2008
OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES
PLEASE RETURN A COPY OF THIS LETTER WITH PAYMENT
OR PAY ON-LINE at www.Pay.Gov (See Below for Details)

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Product Name: GLYFOS X-TRA
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Jennifer DeCarlo
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Please send Registration Service Fee Waiver requests to:

By USPS:
Document Processing Desk (WAIVER)
Office of Pesticide Programs (7504P)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave NW
Washington, DC 20460

By Courier:
Document Processing Desk (WAIVER)
Office of Pesticide Programs (7504P)
U.S. Environmental Protection Agency
Room S-4900 Potomac Yard
2777 S. Crystal Dr.
Arlington, VA

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If you have any questions, please contact the Pesticide

Jim Tompkins/DC/USEPA/US

09/15/2008 04:19 PM

To Vickie Walters/DC/USEPA/US@EPA

cc

bcc

Subject Fw: Glyfos & Glyfos Extra / GlyTol Cotton

Jim Tompkins
Team Leader 25
Herbicide Branch
Registration Division

Phone 703 305 5697
Fax 703 308 0029
E-mail Tompkins.jim@EPA.GOV

----- Forwarded by Jim Tompkins/DC/USEPA/US on 09/15/2008 04:19 PM -----

"Diane Allemang" <diane.allemang@cheminova.com>

09/15/2008 04:12 PM

To Jim Tompkins/DC/USEPA/US@EPA, "Diane Allemang" <diane.allemang@cheminova.com>

cc

Subject RE: Glyfos & Glyfos Extra / GlyTol Cotton

Hi Jim: Bayer/Cheminova will submit the petition on or before September 29, 2008.

Best regards,
Diane

-----Original Message-----
From: Tompkins.Jim@epamail.epa.gov <Tompkins.Jim@epamail.epa.gov>
Sent: Monday, September 15, 2008 11:05 AM
To: Diane Allemang <diane.allemang@cheminova.com>
Subject: RE: Glyfos & Glyfos Extra / GlyTol Cotton

Your Tolerance Petition must fulfill the requirements in 40CFR 180.7(b) 1-16. In particular, I need a Notice of Filing proposing to increase the tolerance for residues of glyphosate per se in or on cotton, gin byproducts from the current 175 to 210 ppm with a statement that you agree the Notice of Filing can be published in the Federal Register. A proposed tolerance of 210 ppm for residues of glyphosate per se in or on cotton, gin byproducts. Practical method for removing any amount of residues that would exceed the proposed tolerance. Information on any maximum residue level established by Codex for residues of glyphosate per se in or on cotton, gin byproducts. If you already submitted information to address items 1-14 you can just reference it, or reference studies in the glyphosate RED.

Jim Tompkins
Team Leader 25
Herbicide Branch
Registration Division

Phone 703 305 5697
Fax 703 308 0029
E-mail Tompkins.jim@EPA.GOV

"Diane Allemang"
<diane.allemang@
cheminova.com>

09/11/2008 02:57
PM

To
Jim Tompkins/DC/USEPA/US@EPA
cc
Subject
RE: Glyfos & Glyfos Extra / GlyTol Cotton

Hello Jim:

As I mentioned on the phone a few minutes ago, sadly, tomorrow is Kari's last day with Cheminova so I am picking this up from her.

We have been speaking with Bayer about the need to prepare the tolerance petition but neither company is clear on what should be included in the petition since it is limited to increasing the tolerance for cotton gin byproducts from 175 ppm to 210 ppm. If the Agency wants all the standard petition sections covered, we are wondering whether data summaries from the RED (which is from 1993) or perhaps the TRED (which is the May 2, 2007 FR notice regarding the expansion of the glyphosate tolerances to cover the DMA salt) will suffice?

I very much want to provide you with the information you need on Monday, September 15th, but I am unsure what date to establish for when we will submit the petition until I have a better idea of what EPA really needs to be in it.

Lastly, is it possible to receive a copy of the HED review?

Best regards,

Diane Allemang
Vice President, Global Regulatory Affairs
Cheminova
1600 Wilson Blvd., Suite 700
Arlington, VA 22209
(P) 703-373-8883, ext. 2
(M) 202-271-0075

-----Original Message-----
From: Tompkins.Jim@epamail.epa.gov [mailto:Tompkins.Jim@epamail.epa.gov]

Sent: Thursday, September 04, 2008 2:29 PM
To: Kari E. Mavian

Subject: Fw: Glyfos & Glyfos Extra / GlyTol Cotton

We have received HED's risk assessment of the application of glyphosate to Bayer's Glyphosate-Tolerant Cotton. HED concluded the field trials indicated that residues of glyphosate per se in/on cotton gin byproducts derived from GHB614 cotton tretaed at the maximum registered use rate were greater than the currently established tolerance. Based on the available data, HED concludes that the cotton gin byproducts tolerance needs to be increased to 210 ppm. This will require submission of a tolerance petition and the accompanying notice of filing.

The current PRIA date is September 28, 2008 for this action. You will need to renegociate this PRIA date no less than 20 weeks from the date of submission of the tolerance petition to allow time for the NOF to be published, 30-day comment period to expire, preparation of the tolerance document, publication of the tolerance document.

By Sept 15, please send me an e-mail letting me know when you anticipate submission of the tolerance petition & agreeing to a renegociated PRIA date 20 weeks from the date you anticipate submission of the tolerance petition.

Jim Tompkins
Team Leader 25
Herbicide Branch
Registration Division

Phone 703 305 5697
Fax 703 308 0029
E-mail Tompkins.jim@EPA.GOV

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES

OPP OFFICIAL RECORD
HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

MEMORANDUM

Date: 2-September-2008

Subject: **Glyphosate.** Label Amendment to Permit Application of Glyphosate to Bayer's Glyphosate-Tolerant Cotton GHB614.

PC Code: 103601
Decision Nos.: 388510 and 388511
Petition No.: NA
Risk Assessment Type: NA
TXR No.: NA
MRID No.: 47320001 and 47507301

DP Nos.: 348927 and 348928
Registration No.: 4787-23 - Glyfos X-TRA
Regulatory Action: Label Amendment
Case No.: NA
CAS No.: 1071-83-6
40 CFR: 180.364

From: Tom Bloem, Chemist
Registration Action Branch 1; Health Effects Division (RAB1/HED; 7509P)

Through: George F. Kramer, Ph.D., Senior Chemist
RAB1/HED (7509P)

To: James Tompkins/Vicki Walters RM 25
Registration Division (RD; 7505P)

Cheminova requested a label amendment permitting the application of Glyfos X-TRA Herbicide (EPA Reg. No.4787-23) and Glyfos Herbicide (EPA Reg. No.4787-31) to Bayer's glyphosate-tolerant cotton GHB614 (GlyTol® cotton).

Received in RRC on 9/3/2008 CW

Executive Summary

Background: Glyphosate is a nonselective Group 9 herbicide which controls plants by inhibiting 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). The Glyphosate Reregistration Eligibility Decision (RED) document was issued September 1993.

Cheminova requested a label amendment permitting the application of Glyfos X-TRA Herbicide (EPA Reg. No.4787-23; soluble concentrate (SC); 4 lbs glyphosate as the isopropylamine salt per gallon; 3.0 lb ae/gal) and Glyfos Herbicide (EPA Reg. No.4787-31; SC; 4 lb glyphosate as the isopropylamine salt per gallon; 3.0 lb ae/gal) to Bayer CropScience glyphosate-tolerant cotton GHB614 (GlyTol® cotton). GHB614 cotton has been genetically modified to produce the 2mEPSPS protein which is not inhibited by glyphosate. The 2mEPSPS gene was generated by introducing mutations into the wild maize EPSPS gene; the 2mEPSPS protein differs from the wild maize EPSPS protein by two amino acids.

Proposed Uses: Cheminova requested a label amendment for Glyfos® X-TRA Herbicide (EPA Reg. No.4787-23; SC; 3.0 lb ae/gal) and Glyfos® Herbicide (EPA Reg. No.4787-31; SC; 3.0 lb ae/gal). The Glyfos® X-TRA Herbicide and Glyfos® Herbicide labels have been revised to change references from application to "Roundup Ready®" crops to "glyphosate-tolerant" crops. The currently registered labels permit application to Roundup Ready® canola, corn, soybean, and cotton with the revised label permitting application to all glyphosate-tolerant varieties of these crops (application scenarios on the revised label are identical to the registered labels). Since, in the future, glyphosate-tolerant varieties of canola, corn, soybean, and/or cotton may be developed which possess a different mechanism of tolerance and this new mechanism of tolerance may result in a change in the tolerance expression and/or numerical value of the tolerance, HED concludes that labeling permitting application to glyphosate-tolerant crops is not appropriate. Based on the currently available data, HED requests that the labels be revised to indicate that application to Roundup Ready® canola, corn, soybean, and cotton and GlyTol® cotton is permitted. In addition, since the field trial data did not include a surfactant, HED requests that both labels prohibit the addition of a surfactant to the spray solution intended for application to cotton (HED Chemistry Science Advisory Committee (ChemSAC) minutes 16-Apr-2008). Revised labels are requested.

Nature of the Residue – Plants: Metabolism studies conducted with nontransgenic corn, cotton, soybeans, and wheat were previously submitted and reviewed. Based on these data, HED concluded that the residue of concern in nontransgenic plants is glyphosate *per se* (Memo, R. Perfetti, 19-Oct-1992; RED, R. Perfetti, 27-Oct-1992; Memo, R. Perfetti, 17-Mar-1994). Metabolism studies have also been submitted on glyphosate-tolerant canola (D242628, T. Bloem, 30-Nov-1998) and glyphosate-tolerant corn (D217539, G. Kramer, 14-Mar-1996). The glyphosate-tolerant canola and corn were genetically modified to express the EPSPS gene derived from *Agrobacterium sp.* (strain CP4) which codes for an EPSPS protein that has reduced affinity for glyphosate as compared to the endogenous EPSPS protein. The glyphosate-tolerant canola and corn were also genetically engineered to express the oxireductase gene which converts glyphosate to the nonherbicidal AMPA. Metabolism in these varieties of transgenic canola and corn was essentially the same as the nontransgenic plants. Therefore, it was concluded that the terminal residue to be regulated, in nontransgenic plants and transgenic corn and canola modified to express the *Agrobacterium sp.* EPSPS and oxireductase genes, is glyphosate *per se*.

Subsequent to this decision, DuPont requested and HED approved a request permitting the commercialization of Optimum™ GAT™ soybean (DP-356Ø43-5). Optimum™ GAT™ soybean was engineered to express the microbial glyphosate acetyltransferase gene (*gat*4601), which confers tolerance to glyphosate via acetylation of the secondary amine group of glyphosate (results in formation of the nonherbicidal *N*-acetyl-glyphosate). As a result of the introduction of this seed line, HED concluded that the residues of concern in plants for tolerance expression and risk assessment should change from glyphosate *per se* to the combined residues of glyphosate and *N*-acetyl-glyphosate (D346713, T. Bloem, 12-Mar-2008). Subsequent to this decision, it was determined that only the tolerance expression for soybeans would change from glyphosate *per se* to the combined residues of glyphosate and *N*-acetyl-glyphosate; the tolerance expression for all other crops would remain as glyphosate *per se*.

HED notes that glyphosate is currently registered for application to cotton genetically modified to express the *Agrobacterium* EPSPS gene (D214931 & D214929, G. Kramer, 31-Jul-1995). The current action is requesting the commercialization of Bayer's CropScience GHB614 cotton (GlyTol® cotton). The petitioner indicated that GHB614 cotton has been genetically modified to produce the 2mEPSPS protein which is not inhibited by glyphosate. The 2mEPSPS gene was generated by introducing mutations into the wild maize EPSPS gene; the 2mEPSPS protein differs from the wild maize EPSPS protein by two amino acids. Based on the current metabolism data and since tolerance to glyphosate in GHB614 cotton is conferred via modification of an endogenous plant EPSPS gene such that the plant is no longer sensitive (*i.e.*, tolerance is not conveyed via metabolism of the herbicide), HED concludes that the previous conclusions concerning the residues of concern for tolerance expression and risk assessment are applicable to GHB614 cotton (*i.e.* the residues of concern for tolerance expression and risk assessment are glyphosate *per se*; ChemSAC minutes of 27-Feb-2008 meeting).

Nature of the Residue – Livestock: The qualitative nature of the residue in livestock following dosing with glyphosate and AMPA is adequately understood. Studies with lactating goats and laying hens fed a mixture of glyphosate and AMPA indicate that the primary route of elimination was by excretion (urine and feces). The MARC determined that the terminal residue to be regulated in livestock is glyphosate *per se* (Memo, R. Perfetti, 19-Oct-1992; RED, R. Perfetti, 27-Oct-1992; Memo, R. Perfetti, 17-Mar-1994).

Since the Optimum™ GAT™ soybean metabolism study resulted in significant residues of *N*-acetyl-glyphosate, DuPont submitted summaries of *in vitro* (rumen fluid, fertile hen egg, and rat liver S9 supernatant) and *in vivo* (rat metabolism study) studies conducted with the *N*-acetyl-glyphosate metabolite (MRID 47007907). Based on these data, HED tentatively determined that the residues of concern in livestock following consumption of glyphosate and *N*-acetyl-glyphosate, for tolerance expression and risk assessment purposes, are glyphosate and *N*-acetyl-glyphosate (D346713, T. Bloem, 12-Mar-2008). HED notes that the current action concerns the application of glyphosate to cotton which will not result in the formation of *N*-acetyl-glyphosate (livestock will only be exposed to glyphosate as a result of the current action). Therefore, the uncertainties concerning the nature of *N*-acetyl-glyphosate residues in livestock which lead to the previous tentative conclusion are not applicable here.

Magnitude of the Residue - Plants: The petitioner submitted field trial data monitoring the magnitude of glyphosate and AMPA residues in GHB614 cotton seed and gin byproducts following application at 1x the labeled rate (AMPA data is not discussed here; see 47507301.der.doc for these data). The field trials indicated that residues of glyphosate *per se* in/on undelinted cottonseed derived from GHB614 cotton treated at the maximum registered were less than the currently established tolerance; therefore, the currently established cottonseed tolerances is appropriate. However residues of glyphosate *per se* in/on cotton gin byproducts derived from GHB614 cotton treated at the maximum registered were greater than the currently established tolerance. Based on the available data, HED concludes that the cotton gin byproduct tolerance should be increased to 210 ppm. A petition proposing this tolerance should be submitted.

HED has previously reviewed a cotton processing study (D214929 and D214931, G. Kramer, 31-Jul-1995). These data indicate that following combined preemergent, postemergent, and preharvest (6-8 days prior to harvest) treatment, residues of glyphosate did not concentrate in cottonseed hull, meal, or oil. Based on these data, HED concludes that tolerances in/on the cottonseed processed commodities are unnecessary.

Magnitude of the Residue - Livestock: Based on the field trial data submitted with the current petition, HED concludes that the currently established undelinted cottonseed tolerance is acceptable (35 ppm) and the cotton gin byproducts tolerance should be increased form 175 ppm to 210 ppm. Since cotton gin byproducts (roughage) constitute a minor feed commodity (5% of the beef cattle diet; not feed to dairy cattle, poultry, or hog) and since glyphosate is currently registered for application to the nongrass animal feed crop group (400 ppm; roughage), HED concludes that the increase in the cotton gin byproducts tolerance will not significantly effect the magnitude of the residue in livestock; the currently established livestock tolerances are appropriate.

Analytical Enforcement Method: Adequate enforcement methods are available for analysis of residues of glyphosate in or on plant and livestock commodities. These methods include gas liquid chromatography (GLC; Method I in Pesticides Analytical Manual (PAM) II; the limit of detection is 0.05 ppm) and high-performance liquid chromatography (HPLC) with fluorometric detection. Use of the GLC method is discouraged due to the lengthiness of the experimental procedure. The HPLC procedure has undergone successful Agency validation and was recommended for inclusion in PAM II (Memo, R. Perfetti, 10/27/92). A GC/MS method for glyphosate in crops has also been validated by EPA's Analytical Chemistry Laboratory (ACL) (PP#5F04555, G. Kramer, 21-Mar-1995). Thus, adequate analytical methods are available for enforcement of cottonseed and gin byproduct tolerances.

Recommendations: Provided the petitioner submits revised labels and proposes the tolerance listed in Table 1 for residues if glyphosate *per se*, HED concludes that the residue chemistry database supports an unconditional registration for application of glyphosate to Bayer CropScience GHB614 cotton (GlyTol® cotton).

Table 1: Tolerance Summary.

Commodity	Proposed Tolerance (ppm)	HED-Recommended Tolerance (ppm)	Comments
cotton, gin byproducts	none	210	Tolerance for residues of glyphosate *per se*.

HED also notes that a revised human-health risk assessment is unnecessary for the following reasons: **(1)** the numerical value of all food tolerances will remain the same; **(2)** the most recent dietary analysis assumed tolerance-level residues, 100% crop treated, and drinking water estimates derived from a direct application to water at 3.75 lb ae/acre (D321992, J. Tomerlin, 29-Sep-2006); and **(3)** the cotton application scenarios are identical to the currently registered application scenario (the current petition concerns application to glyphosate-tolerant GHB614 cotton); therefore, an occupational exposure assessment is unnecessary.

Summary of residue Chemistry Deficiencies:

- Based on the currently available data, HED requests that the proposed Glyfos® X-TRA Herbicide (EPA Reg. No.4787-23; SC; 3.0 lb ae/gal) and Glyfos® Herbicide (EPA Reg. No.4787-31; SC; 3.0 lb ae/gal) labels be revised to indicate that application to Roundup Ready® canola, corn, soybean, and cotton and GlyTol® cotton is permitted. In addition, HED request that both labels be revised to prohibit the addition of a surfactant to the spray solution intended for application to cotton (ChemSAC minutes 16-Apr-2008). Revised labels are requested. Table 4 contains a summary of the application rates currently registered for Roundup Ready® Cotton.
- A petition proposing the HED-recommended tolerance listed in Table 1 is requested.

Background

Glyphosate is a nonselective Group 9 herbicide that is currently registered for pre- and post-emergence application to a variety of fruit, vegetable, and field crops. The RED document was issued September 1993. The chemical structure/nomenclature and physicochemical properties of glyphosate are presented in Tables 2 and 3.

Table 2: Test Compound Nomenclature.

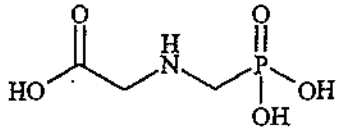
Compound	
Common name	Glyphosate (PC code 471300)
Company experimental name	DPX-B2856
IUPAC/CAS name	*N*-(phosphonomethyl)glycine
CAS registry number	1071-83-6

Table 3: Physicochemical Properties of the Technical Grade Glyphosate.

Parameter	Value	Reference [1]
Melting point/range	189.5 ± 0.5 °C	The Pesticide Manual, 13th Edition
pH	1.9 at 20 °C	
Density	1.705 g/cm^3 at 20 °C	
Water solubility	10.5 g/L at 20 °C	
Solvent solubility	acetone 0.078 g/L methanol 0.231 g/L hexane 0.026 g/L ethyl acetate 0.012 g/L dichloromethane 0.233 g/L n-octanol 0.020 g/L propan-2-ol 0.020 g/L toluene 0.036 g/L	European Commission: Glyphosate 6511/VI/99-final, 1/21/02
Vapor pressure	1.31 x 10^{-2} mPa at 25 °C	The Pesticide Manual, 13th Edition
Dissociation constant, pK_a	0.8 (1st phosphoric), 2.3 (carboxylate), 6.0 (2nd phosphoric), and 11.0 (amine)	Knuuttila. 1979 Acta Chem. Scand. B 33:623-626
Octanol/water partition coefficient, Log(K_{OW})	-3.2 (pH 2-5, 25 °C)	European Commission: Glyphosate 6511/VI/99-final, 1/21/02
UV/visible absorption spectrum	ε = 0.086 (295nm)	

[1] As reported by the petitioner in MRID 47007908.

860.1200 Directions for Use

Cheminova requested a label amendment for Glyfos® X-TRA Herbicide (EPA Reg. No.4787-23; SC; 3.0 lb ae/gal) and Glyfos® Herbicide (EPA Reg. No.4787-31; SC; 3.0 lb ae/gal). The Glyfos® X-TRA Herbicide and Glyfos® Herbicide labels have been revised to change references from application to "Roundup Ready®" crops to "glyphosate-tolerant" crops. The currently registered labels permit application to Roundup Ready® canola, corn, soybean, and cotton with the revised label permitting application to all glyphosate-tolerant varieties of these crops (application scenarios on the revised label are identical to the registered labels). Since, in the future, glyphosate-tolerant varieties of canola, corn, soybean, and/or cotton may be developed which possess a different mechanism of tolerance and this new mechanism of tolerance may result in a change in the tolerance expression and/or numerical value of the tolerance, HED concludes that labeling permitting application to glyphosate-tolerant crops is not appropriate. Based on the currently available data, HED requests that the proposed labels be revised to indicate that application to Roundup Ready® canola, corn, soybean, and cotton and GlyTol® cotton is permitted. In addition, since the field trial data did not include a surfactant, HED requests that both labels prohibit the addition of a surfactant to the spray solution intended for application to cotton (ChemSAC minutes 16-Apr-2008). Revised labels are requested. Table 4 is a summary of the application rates currently registered for Roundup Ready® Cotton.

Table 4: Summary of Registered Cotton Application Scenario.

Formulation (EPA Reg. No.)	App. Timing	App. Rate (lb ae/acre)	Max. No. App. per Season	Use Directions and Limitations
Glyfos® X-TRA Herbicide (EPA Reg. No.4787-23; SC; 3.0 lb ae/gal) Glyfos® Herbicide (EPA Reg. No.4787-31; SC; 3.0 lb ae/gal)	preplant, preemergence, at planting	not specified	3.75 lb ae/acre	-Combined total per year for all applications: 6.0 lbs ae/acre -No more than 2 over-the-top broadcast applications may be made from crop emergence through the 4-leaf stage. - No more than 2 over-the-top broadcast applications may be made from the 5-leaf stage to layby. Over-the-top applications made after the four leaf (node) stage of development may result in boll loss, delayed maturity, and/or yield loss. -Sequential in-crop over-the-top or post-directed applications must be at least 10 days apart and cotton must have at least two nodes of incremental growth between applications. -Allow a minimum of 7 days between application and harvest. -Aerial (3-15 gal/acre) and ground (5-20 gal/acre) application are permitted. -For any crop not listed on the label, applications must be made at least 30 days prior to planting.
	post emergence; ground cracking to laybe	0.75	3.0 lb ae/acre	
	preharvest	t.5 lb ae/acre	1.5 lb ae/acre	

[1] GPA = gallons per aere

860.1300 Nature of the Residue - Plants and Livestock

See executive Summary.

860.1340 Residue Analytical Methods
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Plant Data collection Method: The GHB614 (GlyTol® cotton) cotton gin byproduct and cottonseed samples were analyzed for residues of glyphosate and AMPA using the following procedure. Briefly, residues were extracted via homogenization in methylene chloride:0.1 N HCl (1:3). The extract was centrifuged and the supernatant filtered. An aliquot of the filtrate was collected and fortified with isotopically labeled glyphosate and AMPA (internal standards). The extract was diluted with methylene chloride and centrifuged. An aliquot of the aqueous phase was collected, diluted, and derivatized using 9-fluorenylmethylchloroformate (FMOC). The derivatized sample (glyphosate-FMOC and AMPA-FMOC) was filtered and analyzed by using LC/MS/MS in the negative ion mode. The validate LOQ for glyphosate and AMPA in undelinted seed is 0.05 ppm and the LOQ for glyphosate and AMPA in cotton gin byproducts are 0.05 ppm and 0.50 ppm, respectively (limit of detection (LOD) was not provided).

The methods were adequately validated. The extraction solvent used in the data collection method (methylene chloride:0.1 N HCl (1:3)) is sufficiently similar to the glyphosate *per se* tolerance enforcement method (chloroform:0.1 N HCl (1:3)) to conclude that field-incurred residues were adequately extracted (D183202, R. Perfetti, 27-Oct-1992; MRIDs 40502601 and 40541304). In addition, the concurrent recovery data were adequate and encompassed the residue levels seen in the field trial samples. Therefore, HED concludes that the method is appropriate for data collection purposes.

Plant/Livestock Enforcement Methods: Adequate enforcement methods are available for analysis of residues of glyphosate in or on plant and livestock commodities. These methods include GLC (Method I in Pesticides Analytical Manual (PAM) II; the limit of detection is 0.05 ppm) and HPLC with fluorometric detection. Use of the GLC method is discouraged due to the lengthiness of the experimental procedure. The HPLC procedure has undergone successful Agency validation and was recommended for inclusion in PAM II (Memo, R. Perfetti, 10/27/92). A GC/MS method for glyphosate in crops has also been validated by EPA's Analytical Chemistry Laboratory (ACL) (PP#5F04555, G. Kramer, 21-Mar-1995). Thus, adequate analytical methods are available for enforcement of cottonseed and gin byproduct tolerances.

860.1360 Food and Drug Administration (FDA) Multiresidue Methods (MRMs) Protocols

The FDA Pestrak database (1990) indicate that recoveries are not likely for glyphosate under the FDA MRMs. As part of a previous action, data concerning the behavior of *N*-acetyl-glyphosate under the FDA MRMs was provided (47133201.der.doc). Using Protocol A, *N*-acetyl-glyphosate was determined not to be naturally fluorescent. Using Protocols B and C, derivatized (methylated) and underivatized *N*-acetyl-glyphosate were tested using the nitrogen-specific Modules DG5 (DB-1 column) and DG17 (DB-17 column) which employ a nitrogen-phosphorus detector (NPD) and the more general Module DG18 (DB-225 column) which employs an electron-capture detector (ECD). *N*-acetyl-glyphosate was not chromatographable using DB-1, DB-17 or DB-225 columns by NPD or ECD; therefore, no testing was performed under Protocols D, E, or F. Because the test substance is not a substituted urea, no testing under Protocol G is required. The results indicate that the MRMs are not suitable for the determination of *N*-acetyl-glyphosate. These data were forwarded to the FDA (D349698, T. Bloem, 5-Mar-2008).

860.1380 Storage Stability
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The field trial undelinted cottonseed and cotton bin byproduct samples were held in frozen storage for up to 206 days prior to analysis. The HED Reregistration Eligibility Document (RED) indicated that residues of glyphosate and AMPA are stable in plants when stored frozen for up to 1 year (D183202, R. Perfetti, 27-Oct-1992). Therefore, HED concludes that the storage interval and conditions employed in the current study have been validated.

860.1480 Meat, Milk, Poultry, and Eggs

Based on the field trial data submitted with the current petition, HED concludes that the currently established undelinted cottonseed tolerance is acceptable (35 ppm) and the cotton gin byproducts tolerance should be increased form 175 ppm to 210 ppm. Since cotton gin byproducts (roughage) constitute minor feed commodity (5% of the beef cattle diet; not feed to dairy cattle) and since glyphosate is currently registered for application to the nongrass animal feed crop group (400 ppm; roughage), HED concludes that the increase in the cotton gin byproducts tolerance will not significantly effect the magnitude of the residue in livestock; the currently established livestock tolerances are appropriate.

860.1500 Crop Field Trials
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Glyphosate is registered for preplant, at planting, preemergence, and postemergent (including harvest aid) application to transgenic (Roundup Ready®) and nontransgenic cotton (see Table 4 for registered rate). Tolerances for residues of glyphosate *per se* in/on undelinted cottonseed and cotton gin byproducts are currently established at 35 ppm and 175 ppm, respectively. The petitioner is requesting a label amendment permitting the application of glyphosate to Bayer CropScience glyphosate-tolerant cotton GHB614 (GlyTol® cotton). GHB614 cotton has been genetically modified to produce the 2mEPSPS protein which is not inhibited by glyphosate. The 2mEPSPS gene was generated by introducing mutations into the wild maize EPSPS gene; the 2mEPSPS protein differs from the wild maize EPSPS protein by two amino acids.

In support of the current petition, eight field trials were conducted during the 2006/2007 growing season in the North American Free Trade Agreement (NAFTA) Zones 2 (n=1), 4 (n=2), 6 (n=1), 8 (n=2), and 10 (n=2). Each field trial employed GHB614 cotton and consisted of one untreated plot and two treated plots. The treated plots received either only post-emergent treatment (application scenario A) or a combination of preplant, preemergent and postemergent treatment (application scenario B); Table 5 is a summary of the application scenarios. Single control and duplicate treated cotton samples were harvested 7 days after the last application. Samples were harvested using a mechanical picker (n=2), mechanical stripper (n=2), or were harvested by hand (n=4). The samples were ginned by GLP Technologies (Navasota, TX) into undelinted seed (n=8) and gin byproducts (n=4; only samples harvested using a mechanical picker or stripper).

The undelinted seed and gin byproduct samples were analyzed for residues of glyphosate and AMPA using adequately validated method (storage interval as also been validated). Since AMPA is not a residue of concern, these data are not presented here (for these data see 47507301.der.doc). Residues of glyphosate *per se* in/on undelinted seed and gin byproducts following only post-emergent treatment (application scenario A) or a combination of preplant, preemergent and postemergent treatment (application scenario B) were as follows (see Table 6): (1) glyphosate in/on undelinted cottonseed: application scenario A - 2.11-9.40 ppm (average - 8.07 ppm); application scenario B - 1.00-10.1 ppm (average - 5.83 ppm) and (2) glyphosate in/on cotton gin byproducts: application scenario A - 18.7-168 ppm (average - 94.5 ppm); application scenario B - 8.68-196 ppm (average - 87.0). Residue decline data were included following application using scenario A (n=2; no residue decline data were submitted for scenario B). These data were inconclusive for both undelinted seed and gin byproduct as one trial indicate a reduction in residues as the PHI increased form 0 to 21 days while the other trial resulted in approximately the same residues as the PHI increased form 0 to 21 days.

Conclusion: The residues of concern in cotton for risk assessment and tolerance enforcement purposes is glyphosate *per se*. The field trials indicated that residues of glyphosate *per se* in/on undelinted cottonseed derived from GHB614 cotton treated at the maximum registered were less than the currently established tolerance; therefore, the currently established cottonseed tolerances is appropriate. However residues of glyphosate *per se* in/on cotton gin byproducts derived from GHB614 cotton treated at the maximum registered were greater than the currently established tolerance. Based on the available data, HED concludes that the cotton gin byproduct tolerance should be increased to 210 ppm. A petition proposing this tolerance should be submitted.

Table 5: Summary of Application Scenarios.

Scenario	Crop Stage	Rate (lb ae/acre)	RTI (days)	Total Rate (lb ae/acre)
A (post-emergent treatment only)	broadcast spray; 20-days before layby	0.72-0.75	--	5.87-5.97
	broadcast spray; 10-days before layby	1.09-1.12	8-11	
	broadcast spray; layby	1.09-1.12	9-10	
	broadcast spray; 10-days pre 60% boll opening	0.36-0.37	38-89	
	broadcast spray; 60% boll opening	1.10-1.12	9-11	
	broadcast spray; 7-days preharvest	1.48-1.49	7-69	
B (preplant, preemergent, and postemergent treatment)	broadcast spray; 10-days preplant	1.47-1.52	--	5.88-5.99
	broadcast spray; at planting	1.10-1.13	8-15	
	broadcast spray; preemergence	1.08-1.14	5-8	
	broadcast spray; layby	0.72-0.76	49-74	
	broadcast spray; 7-days preharvest	1.48-1.54	60-142	

Table 6: Summary of Residue Data.

Commodity	Application Scenario[2]	PHI (days)	Residue Levels (ppm)						
			n	Min.	Max.	HAFT[1]	Median	Mean	Std. Dev.
Glyphosate									
undelinted seed	A[2]	6-7	16	2.11	9.40	8.94	5.34	8.07	2.50
	B[2]	6-7	16	1.00	10.1	7.22	2.78	5.83	2.40
gin byproduct	A[2]	6-7	8	18.7	168	164	99.3	94.5	60.4
	B[2]	6-7	8	8.68	196	189	75.2	87.0	69.2

[1] HAFT = Highest-Average Field Trial.

[2] A (post-emergent treatment only; total application rate of 7.94-8.07 lb ae/acre): three applications prior to layby (RTI = 10 days); two applications prior to 60% boll opening (RTI = 10 days); and single application 7 days prior to harvest; B (pre- and post-emergent treatment; total application rate of 7.94-8.10 lb ae/acre): single application 10 days before planting; application at planting; single pre-emergent application (7 days after planting); single application at layby; and single application 7 days prior to harvest.

860.1520 Processed Food and Feed

HED has previously reviewed a cotton processing study (D214929 and D214931, G. Kramer, 31-Jul-1995). These data indicate that following combined preemergent, postemergent, and preharvest (6-8 days prior to harvest) treatment, residues of glyphosate did not concentrate in cotton hull, meal, or oil. Based on these data, HED concludes that tolerances in/on the cottonseed processed commodities are unnecessary.

860.1850 & 1900 Confined and Field Accumulation in Rotational Crops

Based on previously-reviewed confined rotational crop studies (3.71 lb ae/acre; MRIDs 41543201 and 41543202, A. Abramovitch, 14-Oct-1992), HED concluded that a 30-day PBI was appropriate for all nonlabeled crops (D200041, G. Kramer, 12-May-1994). The rate conducted in the rotational crop study was 0.6x the seasonal cotton application rate (6.0 lb ae/acre). HED concludes that the 30-day PBI included on the labels are appropriate for the following reasons: (1) significant portion of the seasonal total may be applied preplant, at planting, and preemergence (up to 3.7 lb ae/acre); (2) a maximum of 3.0 lb ae/acre may be applied from the 5-leaf crop growth stage to harvest; (3) the long duration from planting to harvest (150 days; *Food and Feed Crops of the United States* (2nd edition)).

860.1550 Proposed Tolerances

Based on the available data, HED concludes that the tolerance listed in Table 7 for residues of glyphosate *per se* is appropriate. HED notes that there are no Codex, Canadian, and Mexican maximum residue limits for residues of glyphosate in/on cotton gin byproducts; therefore, harmonization is not an issue.

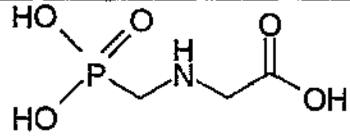
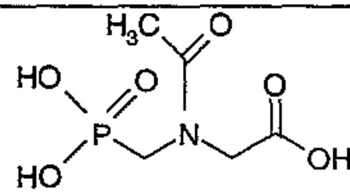
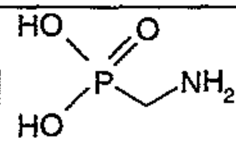
Table 7: Tolerance Summary.

Commodity	Proposed Tolerance (ppm)	HED-Recommended Tolerance (ppm)	Comments
cotton, gin byproducts	none	210	Tolerance for the residues of glyphosate *per se*.

RDI: RAB1 Chemists (5-Mar-2008)
T. Bloem:S10945:Potomac Yard 1:703-605-0217:7509P:RAB1

Attachment 1 - Chemical Structures
Attachment 2 - International Residue Limit Status Sheet

Attachment 1 - Chemical Structures

compound	structure
Glyphosate *N*-(phosphonomethyl)glycine	
N-acetyl-glyphosate *N*-acetyl-*N*-(phosphonomethyl)glycine	
AMPA (aminomethyl)phosphonic acid	

Attachment 2 - International Residue Limit Status sheet

INTERNATIONAL RESIDUE LIMIT STATUS			
Chemical Name: *N*-(phosphonomethyl)glycine	**Common Name:** glyphosate	Proposed tolerance Reevaluated tolerance X Other - HED recommended tolerances	Date: 5/6/08

Codex Status (Maximum Residue Limits)	U. S. Tolerances
No Codex proposal step 6 or above √No Codex proposal step 6 or above for the crops requested	Petition Number: 4787-23 - Glyfos X-TRA DP Number: D348927 and D348928 Other Identifier:
Residue definition: Glyphosate. Note: MRLs are not set for cotton gin byproducts, as it is not considered a major item in international trade.	Reviewer/Branch: Tom Bloem/RAB1 Residue definition: glyphosate

Crop (s)	MRL (mg/kg)	Crop(s)	Tolerance (ppm)
Cotton seed	40	cotton gin byproducts	210

Limits for Canada	Limits for Mexico
No Limits √ No Limits for the crops requested	No Limits √ No Limits for the crops requested
Residue definition: *N*-(phosphonomethyl) glycine, including the metabolite aminomethylphosphonic acid	Residue definition: glifosato

Crop(s)	MRL (mg/kg)	Crop(s)	MRL (mg/kg)
		Cotton seed	15

Notes/Special Instructions: S.Funk, 05/06/2008.

Primary Evaluator	[signature] Tom Bloem, Chemist Registration Action Branch 1 (RAB1) Health Effects Division (HED; 7509P)	2-September-2008
Approved by	[signature] George F. Kramer, Ph.D., Senior Chemist RAB1/HED (7509P)	2-September-2008

STUDY REPORT:

MRID 47507301. Krolski, M. and Dacus, S. (2008). Glyphosate 480 EC - Magnitude of the Residue in/on Glyphosate Tolerant (GlyTol) Cotton. Unpublished data prepared by Bayer CropScience. 246 p.

EXECUTIVE SUMMARY:

Bayer CropScience submitted a glyphosate field trial study conducted with glyphosate-tolerant cotton (GHB614 cotton; GlyTol® cotton). Glyphosate is a nonselective herbicide which controls plants by inhibiting 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). GHB614 cotton has been genetically modified to produce the 2mEPSPS protein which is not inhibited by glyphosate. The 2mEPSPS gene was generated by introducing mutations into the wild maize EPSPS gene; the 2mEPSPS protein differs from the wild maize protein by two amino acids.

Eight field trials were conducted during the 2006/2007 growing season in the North American Free Trade Agreement (NAFTA) Zones 2 (n=1), 4 (n=2), 6 (n=1), 8 (n=2), and 10 (n=2). As indicated above, each of the field trials was conducted with the glyphosate-tolerant cotton GHB614. Each field trial consisted of one untreated plot and two treated plots. The treated plots received either only post-emergent treatment (application scenario A; total rate of 5.87-5.97 lb ae/acre) or a combination of preplant, preemergent and postemergent treatment (application scenario B; total rate of 5.88-5.99 lb ae/acre); Table C.1 is a summary of the application scenarios. All applications employed the 480 EC glyphosate formulation (emulsifiable concentrate; 4 lbs glyphosate as the isopropylamine salt per gallon; 3.0 lb ae/gal) and were broadcast sprays with spray volumes of 8-20 gallons per acre (GPA; no adjuvants were added to the spray solutions). Single control and duplicate treated cotton samples were harvested 6-7 days after the last application. Samples were harvested using a mechanical picker (n=2), mechanical stripper (n=2), or were harvested by hand (n=4). The samples were ginned by GLP Technologies (Navasota, TX) into undelinted seed (n=8) and gin byproducts (n=4; only samples harvested using a mechanical picker or stripper resulted in formation of cotton gin byproducts).

The undelinted seed and gin byproduct samples were analyzed for residues of glyphosate and aminomethyl phosphonic acid (AMPA; see attachment 1 for structure). The extraction solvent used in the data collection method (methylene chloride:0.1 N HCl (1:3)) is sufficiently similar to the tolerance enforcement method (chloroform:0.1 N HCl (1:3)) to conclude that field-incurred residues were adequately extracted (D183202, R. Perfetti, 27-Oct-1992; MRIDs 40502601 and 40541304). In addition, the concurrent recovery data were adequate and encompassed the residue levels seen in the field trial samples. Residues of AMPA were <LOQ (limit of

quantitation) in/on all control samples. However, residues of glyphosate were >LOQ in/on control undelinted cottonseed (≤0.09 (average - 0.02 ppm)) and control cotton gin byproducts (≤0.22 (average - 0.12 ppm)). Based on the minimum glyphosate residue in/on treated undelinted seed (1.00 ppm) and gin byproduct (8.68 ppm) samples, HED concludes that the glyphosate residues in/on the control samples are insignificant. Therefore, HED concludes that the method has been adequately validated and is appropriate for data collection purposes. Based on the lower limit of method validation, the LOQ for glyphosate and AMPA in undelinted seed is 0.05 ppm and the LOQ for glyphosate and AMPA in gin byproducts are 0.05 ppm and 0.50 ppm, respectively (limits of detection (LODs) were not provided).

The samples were held in frozen storage for up to 206 days prior to analysis. The HED Reregistration Eligibility Document (RED) indicated that residues of glyphosate and AMPA are stable in plants when stored frozen for up to 1 year (D183202, R. Perfetti, 27-Oct-1992). Therefore, HED concludes that the storage interval and conditions employed in the current study have been validated.

Residues of glyphosate and AMPA in/on undelinted seed and gin byproducts following post-emergent treatment (application scenario A) or a combination of preplant, preemergent and postemergent treatment (application scenario B) were as follows: (1) glyphosate in/on undelinted cottonseed: application scenario A - 2.11-9.40 ppm (average - 8.07 ppm); application scenario B - 1.00-10.1 ppm (average - 5.83 ppm); (2) glyphosate in/on cotton gin byproducts: application scenario A - 18.7-168 ppm (average - 94.5 ppm); application scenario B - 8.68-196 ppm (average - 87.0); (3) AMPA in/on undelinted cottonseed: application scenario A - 0.07-0.51 ppm (average - 0.15 ppm); application scenario B - <0.05-0.26 ppm (average - 0.09 ppm); and (4) AMPA in/on cotton gin byproducts: application scenario A - 0.15-1.74 ppm (average - 0.79 ppm); application scenario B - 0.12-1.42 ppm (average - 0.67). Residue decline data were included following application using scenario A (n=2; no residue decline data were submitted for scenario B). These data were inconclusive for both undelinted seed and gin byproduct as one trial indicate a reduction in residues as the PHI increased form 0 to 21 days while the other trial resulted in approximately the same residues as the PHI increased form 0 to 21 days.

STUDY/WAIVER ACCEPTABILITY/DEFICIENCIES/CLARIFICATIONS:

Under the conditions and parameters used in the study, the field trial residue data are classified as scientifically acceptable. The acceptability of this study for regulatory purposes is addressed in the forthcoming U.S. EPA Residue Chemistry Summary Document, DP# 348927. HED notes that the results from this study were initially reported in MRID 47320001; due to errors in appendix 3, the petitioner submitted a revised report (MRID 47507301).

COMPLIANCE:

Signed and dated Good Laboratory Practice (GLP), Quality Assurance and Data Confidentiality statements were provided. No deviations from regulatory requirements were reported which would have an impact on the validity of the study.

A. BACKGROUND INFORMATION

Glyphosate is a nonselective Group 9 herbicide that is currently registered for pre- and post-emergence control of susceptible weeds in a variety of fruit, vegetable, and field crops. Tolerances are currently established for the combined residues of glyphosate and *N*-acetyl-glyphosate, resulting from the application of glyphosate, the isopropylamine salt of glyphosate, the ethanolamine salt of glyphosate, the ammonium salt of glyphosate, and the potassium salt of glyphosate in/on various plant commodities, at levels ranging 0.2-400 ppm [40 CFR §180.364(a)]. The Glyphosate RED was issued September 1993. The chemical structure and nomenclature of glyphosate and the physicochemical properties of the technical grade of glyphosate are presented in Tables A.1 and A.2.

Table A.1. Test Compound Nomenclature.

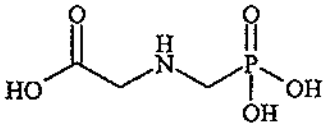
Structure	
Common name	Glyphosate
Company experimental name	DPX-B2856
IUPAC name	*N*-(phosphonomethyl)glycine
CAS name	*N*-(phosphonomethyl)glycine
CAS registry number	1071-83-6
PC Code	417300

Table A.2. Physicochemical Properties of the Technical Grade Test Compound.

Melting point	189.5 ± 0.5 °C	The Pesticide Manual, 13th Edition
pH	1.9 at 20 °C	
Density	1.705 g/cm^3 at 20 °C	
Water solubility	10.5 g/L at 20 °C	
Solvent solubility	acetone 0.078 g/L methanol 0.231 g/L hexane 0.026 g/L ethyl acetate 0.012 g/L dichloromethane 0.233 g/L n-octanol 0.020 g/L propan-2-ol 0.020 g/L toluene 0.036 g/L	European Commission: Glyphosate 6511/VI/99-final, 1/21/02
Vapor pressure	1.31 x 10^{-1} mPa at 25 °C	The Pesticide Manual, 13th Edition
Dissociation constant, pK_a	0.8 (1st phosphoric), 2.3 (carboxylate), 6.0 (2nd phosphoric), and 11.0 (amine)	Knuuttila. 1979 Acta Chem. Scand. B 33:623-626
Octanol/water partition coefficient, Log(K_{OW})	-3.2 (pH 2-5, 25 °C)	European Commission: Glyphosate 6511/VI/99-final, 1/21/02
UV/visible absorption spectrum	ε = 0.086 (295nm)	

B. EXPERIMENTAL DESIGN

B.1. Study Site Information

Eight field trials were conducted on glyphosate-tolerant cotton (GHB614) during the 2006 growing season. Test crops were grown and maintained according to agricultural practices typical for the growing region. Maintenance pesticides and fertilizers used were reported. For each field trial, the total rainfall and temperature range were reported. Historical weather data were not included in the submission. However, the study stated that the temperatures and rainfall were comparable to 30-year historical data with the exception of the Uvalde, TX trial which had lower than typical rainfall. Table B.1.1 is a summary of the trial site conditions.

Each field trial consisted of one untreated plot and two treated plots. The treated plots received either only post-emergent treatment or a combination of preplant, preemergent, and postemergent treatment. All applications were made using the 480 EC formulation and were broadcast sprays (spray volumes of 8-20 GPA; no adjuvants were added to the spray solutions). Tables B.1.2 and B.1.3 are summaries of the requested number of cotton field trials for U.S. registration and the number submitted as part of the current study and the actual test parameters, respectively.

Table B.1.1. Trial Site Conditions.

Trial Identification: City, State; Year (Trial ID No.)	Soil characteristics[1]			
	Type	%OM[1]	pH	CEC[1]
Sycamore, GA; 2006/2007 (99001-06DA)	loamy sand	0.88	6.1	2.40
Newport, AR; 2006 (99002-06HA)	sandy loam	1.1	6.4	6.4
Proctor, AR; 2006 (99003-06HA)	clay	1.4	7.0	19.4
East Bernard, TX; 2006 (99004-06HA)	sandy clay	0.4	7.4	15.6
Uvalde, TX; 2006 (99005-06DA)	clay	2.8	7.7	41.4
Edmondson, TX; 2006 (99006-06HA)	loam	1.1	8.2	19.5
Fresno, CA; 2006 (99007-06HA)	sandy loam	0.37	6.6	4.3
Sanger, CA; 2006 (99008-06HA)	sandy loam	0.4	6.4	9.4

[1] NA = not available; OM = organic matter; CEC = cation-exchange capacity.

Table B.1.2. Trial Numbers and Geographical Locations.

NAFTA Growing Zones	Cotton	
	Submitted	Requested[1]
1	--	--
2	1	1/1
3	--	--
4	2	3/2
5	--	--
6	1	1/1
7	--	--
8	2	4/3
9	--	--
10	2	3/2
11	--	--
12	--	--
13	--	--
Total	8	12/9

[1] Second number is the number and location of trials required if residues are <LOQ.

Table B.1.3. Study Use Pattern.[1]

Trial Identification: City, State; Year (Trial ID No.)	EP[2]	Application					Tank Mix/ Adjuvants; Harvest Procedure
		Method; Timing	Vol. (GPA)	Rate (lb ae/acre)	RTI[3] (days)	Total Rate (lb ae/acre)	
Sycamore, GA; 2006/2007 (99001-06DA)	480 EC	broadcast spray; 20-days before layby	18	0.75	--	5.96	none; mechanical picker
		broadcast spray; 10-days before layby	17	1.12	10		
		broadcasl spray; layby	15	1.10	10		
		broadcast spray; 10-days pre 60% boll opening	18	0.37	64		
		broadcast spray; 60% boll opening	17	1.12	9		
		broadcast spray; 7-days preharvest	16	1.49	69		
	480 EC	broadcast spray; 10-days preplant	16	1.47	--	5.97	none; mechanical picker
		broadcast spray; at planting	17	1.12	10		
		broadcast spray; preemergence	17	1.14	7		
		broadcast soray; layby	16	0.76	59		
		broadcast spray; 7-days preharvest	16	1.47	142		
Newport, AR; 2006 (99002-06HA)	480 EC	broadcast spray; 20-days before layby	10	0.72	--	5.88	none; mechanical picker
		broadcast spray; 10-days before layby	10	1.11	10		
		broadcast spray; layby	20	1.09	10		
		broadcast spray; 10-days ore 60% boll opening	10	0.37	56		
		broadcast spray; 60% boll opening	10	1.10	11		
		broadcast soray; 7-days preharvest	10	1.48	10		
	480 EC	broadcast spray; 10-days preplant	10	1.50	--	5.94	none; mechanical picker
		broadcast spray; at planting	10	1.11	13		
		broadcast spray; preemergence	10	1.12	5		
		broadcast spray; layby	20	0.72	55		
		broadcast spray; 7-days preharvest	10	1.49	77		
Proctor, AR; 2006 (99003-06HA)	480 EC	broadcast spray; 20-days before layby	16	0.73	--	5.92	none; hand picked
		broadcast spray; 10-days before layby	16	1.11	10		
		broadcast spray; layby	16	1.11	10		
		broadcast spray; 10-days pre 60% boll ooening	16	0.37	49		
		broadcast spray; 60% boll opening	16	1.12	10		
		broadcast spray; 7-days preharvest	16	1.48	10		
	480 EC	broadcast spray; 10-days preplant	15	1.49	--	5.92	none; hand picked
		broadcast spray; at planting	15	1.10	15		
		broadcast spray; preemergence	15	1.11	6		
		broadcast spray; layby	16	0.73	61		
		broadcast spray; 7-days preharvest	16	1.48	69		
East Bernard, TX; 2006 (99004-06HA)	480 EC	broadcast spray; 20-days before layby	10	0.74	--	5.91	none; hand picked
		broadcasl spray; 10-days before layby	10	1.12	8		
		broadcast spray; layby	10	1.11	10		
		broadcast spray; 10-days ore 60% boll opening	10	0.36	38		
		broadcast spray; 60% boll opening	11	1.11	9		
		broadcast soray; 7-days preharvest	10	1.48	13		
	480 EC	broadcast spray; 10-days preplant	10	1.52	--	6.00	none; hand picked
		broadcasl spray; at planting	11	1.13	8		
		broadcast spray; preemergence	11	1.11	6		
		broadcast spray; layby	10	0.74	73		
		broadcast spray; 7-days preharvesl	10	1.49	60		

Table B.1.3. Study Use Pattern.[1]

Trial Identification: City, State; Year (Trial ID No.)	EP[2]	Application: Method; Timing	Vol. (GPA)	Rate (lb ae/acre)	RTI[3] (days)	Total Rate (lb ae/acre)	Tank Mix/ Adjuvants; Harvest Procedure
Uvalde, TX; 2006 (99005-06DA)	480 EC	broadcast spray; 20-days before layby	9	0.74	--	5.90	none; mechanical stripper
		broadcast spray; 10-days before layby	9	1.10	8		
		broadcast spray; layby	9	1.09	10		
		broadcast spray; 10-days pre 60% boll opening	9	0.37	49		
		broadcast spray; 60% boll opening	8	1.11	10		
		broadcast spray; 7-days preharvest	9	1.48	12		
	480 EC	broadcast spray; 10-days preplant	14	1.49	--	6.00	none; mechanical stripper
		broadcast spray; at planting	14	1.13	8		
		broadcast spray; preemergence	14	1.09	8		
		broadcast spray; layby	9	0.74	53		
		broadcast spray; 7-days preharvest	9	1.54	71		
Edmondson, TX; 2006 (99006-06HA)	480 EC	broadcast spray; 20-days before layby	15	0.75	--	5.90	none; mechanical stripper
		broadcast spray; 10-days before layby	15	1.11	11		
		broadcast spray; layby	14	1.10	9		
		broadcast spray; 10-days pre 60% boll opening	17	0.37	89		
		broadcast spray; 60% boll opening	17	1.10	10		
		broadcast spray; 7-days preharvest	17	1.48	12		
	480 EC	broadcast spray; 10-days preplant	18	1.47	--	5.88	none; mechanical stripper
		broadcast spray; at planting	18	1.12	9		
		broadcast spray; preemergence	17	1.08	5		
		broadcast spray; layby	14	0.73	49		
		broadcast spray; 7-days preharvest	17	1.48	111		
Fresno, CA; 2006 (99007-06HA)	480 EC	broadcast spray; 20-days before layby	18	0.74	--	5.91	none; hand picked
		broadcast spray; 10-days before layby	18	1.10	10		
		broadcast spray; layby	18	1.12	10		
		broadcast spray; 10-days pre 60% boll opening	18	0.36	88		
		broadcast spray; 60% boll opening	18	1.11	10		
		broadcast spray; 7-days preharvest	18	1.48	7		
	480 EC	broadcast spray; 10-days preplant	19	1.48	--	5.93	none; hand picked
		broadcast spray; at planting	19	1.11	10		
		broadcast spray; preemergence	18	1.11	5		
		broadcast spray; layby	18	0.74	57		
		broadcast spray; 7-days preharvest	18	1.48	105		
Sanger, CA; 2006 (99008-06HA)	480 EC	broadcast spray; 20-days before layby	14	0.74	--	5.90	none; hand picked
		broadcast spray; 10-days before layby	14	1.09	10		
		broadcast spray; layby	14	1.10	10		
		broadcast spray; 10-days pre 60% boll opening	14	0.37	64		
		broadcast spray; 60% boll opening	14	1.12	10		
		broadcast spray; 7-days preharvest	14	1.48	18		
	480 EC	broadcast spray; 10-days preplant	15	1.48	--	5.96	none; hand picked
		broadcast spray; at planting	15	1.13	10		
		broadcast spray; preemergence	14	1.12	6		
		broadcast spray; layby	14	0.75	74		
		broadcast spray; 7-days preharvest	14	1.49	92		

[1] The study did not indicate the harvest equipment used for each trial but did indicate that two of the trials employed a mechanical picker, two of the trials employed a mechanical stripper, and the remaining four trials were harvested by hand.
[2] EP = End-use Product; 480 EC (emulsifiable concentrate (4.0 lb ai/gal; 3.0 lb ae/gal).

B.2. Sample Handling and Preparation

Single control and duplicate treated cotton gin byproduct and/or cottonseed samples were harvested 7 days after the last application. Samples were harvested using a mechanical picker (n=2); mechanical stripper (n=2) or by hand (n=4). All samples were placed in frozen storage within 4 hours of harvest. The samples were shipped to GLP Technologies (Navasota, TX) via freezer truck or at ambient temperature (East Bernard, TX trial only) via overnight delivery. Upon arrival at GLP Technologies, the samples were placed on frozen storage (<-5 °C). The samples were ginned and the undelinted seed and gin byproduct samples were shipped frozen to Bayer Research Park (Stilwell, KS) for analysis via freezer truck or on dry ice via overnight delivery. Upon arrival at the analytical facility, the samples were placed in frozen storage (<-19 °C).

B.3. Analytical Methodology

The cotton gin byproduct and cottonseed samples were analyzed for residues of glyphosate and AMPA using the following procedure. Briefly, residues were extracted via homogenization in methylene chloride:0.1 N HCl (1:3). The extract was centrifuged and the supernatant filtered. An aliquot of the filtrate was collected and fortified with isotopically labeled glyphosate and AMPA (internal standards). The extract was diluted with methylene chloride and centrifuged. An aliquot of the aqueous phase was collected, diluted, and derivatized using 9-fluorenylmethylchloroformate (FMOC). The derivatized sample (glyphosate-FMOC and AMPA-FMOC) was filtered and analyzed by using a liquid chromatograph/mass spectrometer/ mass spectrometer (LC/MS/MS) in the negative-ion mode. The validated LOQ for glyphosate and AMPA in undelinted seed is 0.05 ppm and the validated LOQ for glyphosate and AMPA in cotton gin byproducts are 0.05 ppm and 0.50 ppm, respectively (LODs were not provided).

C. RESULTS AND DISCUSSION

Bayer CropScience submitted a glyphosate field trial study conducted with glyphosate-tolerant cotton (GHB614 cotton; GlyTol® cotton). Glyphosate is a nonselective herbicide which controls plants by inhibiting EPSPS. GHB614 cotton has been genetically modified to produce the 2mEPSPS protein which is not inhibited by glyphosate. The 2mEPSPS gene was generated by introducing mutations into the wild maize EPSPS gene; the 2mEPSPS protein differs from the wild maize EPSPS protein by two amino acids.

Eight field trials were conducted during the 2006/2007 growing season in NAFTA Zones 2 (n=1), 4 (n=2), 6 (n=1), 8 (n=2), and 10 (n=2). As indicated above, each of the field trials was conducted with the glyphosate-tolerant cotton GHB614. Each field trial consisted of one untreated plot and two treated plots. The treated plots received either only post-emergent treatment (application scenario A; total rate of 5.87-5.97 lb ae/acre) or a combination of preplant, preemergent and postemergent treatment (application scenario B; total rate of 5.88-5.99 lb ae/acre); Table C.1 is a summary of the application scenarios. All applications employed the 480 EC glyphosate formulation and were broadcast sprays with spray volumes of 8-20 GPA (no adjuvants were added to the spray solutions). Single control and duplicate treated cotton samples

were harvested 6-7 days after the last application. Samples were harvested using a mechanical picker (n=2), mechanical stripper (n=2), or were harvested by hand (n=4). The samples were ginned by GLP Technologies (Navasota, TX) into undelinted seed (n=8) and gin byproducts (n=4; only samples harvested using a mechanical picker or stripper resulted in formation of cotton gin byproducts).

The undelinted seed and gin byproduct samples were analyzed for residues of glyphosate and AMPA (see attachment 1 for structure). The extraction solvent used in the data collection method (methylene chloride:0.1 N HCl (1:3)) is sufficiently similar to the tolerance enforcement method (chloroform:0.1 N HCl (1:3)) to conclude that field-incurred residues were adequately extracted (D183202, R. Perfetti, 27-Oct-1992; MRIDs 40502601 and 40541304). In addition, the concurrent recovery data were adequate and encompassed the residue levels seen in the field trial samples (see Table C.2). Residues of AMPA were <LOQ in/on all control samples. However, residues of glyphosate were >LOQ in/on control undelinted cottonseed (≤0.09 (average - 0.02 ppm)) and control cotton gin byproducts (≤0.22 (average - 0.12 ppm)). Based on the minimum glyphosate residue in/on treated undelinted seed (1.00 ppm) and gin byproduct (8.68 ppm) samples, HED concludes that the glyphosate residues in/on the control samples are insignificant. Therefore, HED concludes that the method has been adequately validated and is appropriate for data collection purposes. Based on the lower limit of method validation, the LOQ for glyphosate and AMPA in undelinted seed is 0.05 ppm and the LOQ for glyphosate and AMPA in gin byproducts are 0.05 ppm and 0.50 ppm, respectively (LODs were not provided).

The samples were held in frozen storage for up to 206 days prior to analysis (see Table C.3). The RED indicated that residues of glyphosate and AMPA are stable in plants when stored frozen for up to 1 year (D183202, R. Perfetti, 27-Oct-1992). Therefore, HED concludes that the storage interval and conditions employed in the current study have been validated.

Residues of glyphosate and AMPA in/on undelinted seed and gin byproducts following post-emergent treatment (application scenario A) or a combination of preplant, preemergent and postemergent treatment (application scenario B) were as follows (see Tables C.4.1 and C.4.2): (1) glyphosate in/on undelinted cottonseed: application scenario A - 2.11-9.40 ppm (average - 8.07 ppm); application scenario B - 1.00-10.1 ppm (average - 5.83 ppm); (2) glyphosate in/on cotton gin byproducts: application scenario A - 18.7-168 ppm (average - 94.5 ppm); application scenario B - 8.68-196 ppm (average - 87.0); (3) AMPA in/on undelinted cottonseed: application scenario A - 0.07-0.51 ppm (average - 0.15 ppm); application scenario B - <0.05-0.26 ppm (average - 0.09 ppm); and (4) AMPA in/on cotton gin byproducts: application scenario A - 0.15-1.74 ppm (average - 0.79 ppm); application scenario B - 0.12-1.42 ppm (average - 0.67). Residue decline data were included following application using scenario A (n=2; no residue decline data were submitted for scenario B). These data were inconclusive for both undelinted seed and gin byproduct as one trial indicate a reduction in residues as the PHI increased form 0 to 21 days while the other trial resulted in approximately the same residues as the PHI increased form 0 to 21 days.

Table C.1. Summary of Application Scenarios.

Scenario	Crop Stage	Rate (lb ae/acre)	RTI (days)	Total Rate (lb ae/acre)
A (post-emergent treatment only)	broadcast spray; 20-days before layby	0.72-0.75	--	5.87-5.97
	broadcast spray; 10-days before layby	1.09-1.12	8-11	
	broadcast spray; layby	1.09-1.12	9-10	
	broadcast spray; 10-days pre 60% boll opening	0.36-0.37	38-89	
	broadcast spray; 60% boll opening	1.10-1.12	9-11	
	broadcast spray; 7-days preharvest	1.48-1.49	7-69	
B (preplant, preemergent, and postemergent treatment)	broadcast spray; 10-days preplant	1.47-1.52	--	5.88-5.99
	broadcast spray; at planting	1.10-1.13	8-15	
	broadcast spray; preemergence	1.08-1.14	5-8	
	broadcast spray; layby	0.72-0.76	49-74	
	broadcast spray; 7-days preharvest	1.48-1.54	60-142	

Table C.2. Summary of Concurrent Recoveries of Glyphosate and Metabolites from Soybean Matrices.

Matrix	Spike Level (ppm)	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev. (%)
Glyphosate				
cottonseed	0.05	7	82, 97, 100, 102, 104, 105, 106	99 ± 8
	0.50	3	99, 102, 106	102 ± 4
	12.5	3	93, 96, 99	96 ± 3
cotton gin byproduets	0.50	7	82, 83, 85, 86, 87, 92, 98	88 ± 6
	200	3	89, 91, 95	92 ± 3
AMPA				
cottonseed	0.05	7	78, 78, 82, 83 90, 102, 102	88 ± 13
	0.50	3	91, 92, 98	94 ± 4
	12.5	3	94, 98, 100	97 ± 3
cotton gin byproducts	0.05	7	72, 80, 82, 86, 87, 89, 100	85 ± 9
	20	3	104, 118, 120	114 ± 9

Table C.3. Summary of Storage Conditions.

Matrix	Storage Temperature (°C)	Storage Duration[1]	Interval of Demonstrated Storage Stability
cottoneseed	frozen	206 days	365 days (glyphosate RED, D183202, R. Perfetti, 27-Oct-1992)
cotton gin byproduct			

[1] Interval from harvest to extraction; samples were analyzed within 3 days of extraction.

Table C.4.1. Residue Data from Crop Field Trials.[1]

City, State; Year (Trial ID#); NAFTA Zone; Harvest Procedure	Crop; Variety[1]	Application Scenario[2]	Matrix	PHI (days)	Residues (ppm)		
					Glyphosate	AMPA	Total[3]
Sycamore, GA; 2006/2007; (99001-06DA); 2; mechanical picker	GHB614	A	undelinted seed	0	3.79, 3.82	0.11, 0.09	3.90, 3.91
				3	3.72, 3.44	0.14, 0.13	3.86, 3.57
				7	2.11, 2.22	0.08, 0.07	2.19, 2.29
				14	2.58, 2.53	0.09, 0.09	2.67, 2.62
				21	1.99, <0.05	0.07, <0.05	2.06, <0.10
			gin byproduct	0	128, 106	0.93, 0.94	129, 107
				3	127, 120	0.97, 1.01	128, 121
				7	19.4, 18.7	0.15, 0.16	19.6, 18.9
				14	8.65, 8.91	0.18, 0.18	8.83, 9.09
				21	6.76, 7.27	0.16, 0.15	6.92, 7.42
		B	undelinted seed	7	1.00, 1.09	<0.05, <0.05	<1.05, <1.14
			gin byproduct	7	9.29, 8.68	0.14, 0.12	9.43, 8.80
Newport, AR; 2006 (99002-06HA); 4; mechanical picker	GHB614	A	undelinted seed	6	4.81, 5.10	0.16, 0.14	4.97, 5.24
			gin byproduct	6	168, 160	1.44, 1.74	169, 162
		B	undelinted seed	6	3.63, 3.57	0.06, 0.06	3.69, 3.63
			gin byproduct	6	196, 181	1.42, 1.40	197, 182
Proctor, AR; 2006 (99003-06HA); 4; hand picked	GHB614	A	undelinted seed	7	8.10, 7.58	0.51, 0.50	8.61, 8.08
		B	undelinted seed	7	2.42, 2.78	0.22, 0.26	2.64, 3.04
East Bernard, TX; 2006 (99004-06HA); 6; hand picked	GHB614	A	undelinted seed	6	5.59, 5.94	0.23, 0.25	5.82, 6.19
		B	undelinted seed	6	2.78, 3.00	0.09, 0.10	2.87, 3.10
Edmondson, TX; 2006 (99006-06HA); 8; mechanical stripper	GHB614	A	undelinted seed	7	8.48, 9.40	0.07, 0.09	8.55, 9.49
			gin byproduct	7	130, 131	0.74, 0.67	130, 132
		B	undelinted seed	7	4.33, 10.1	<0.05, 0.08	4.38, 10.2
			gin byproduct	7	68.7, 82.2	0.28, 0.29	69.0, 82.5
Fresno, CA; 2006 (99007-06HA); 10; hand picked	GHB614	A	undelinted seed	7	2.91, 2.93	0.15, 0.12	3.06, 3.05
		B	undelinted seed	7	2.12, 1.66	<0.05, <0.05	<2.17, <1.71
Sanger, CA; 2006 (99008-06HA); 10; hand picked	GHB614	A	undelinted seed	7	3.57, 3.19	0.17, 0.20	3.74, 3.39
		B	undelinted seed	7	2.44, 2.21	0.08, 0.07	2.52, 2.28
Uvalde, TX; 2006 (99005-06DA); 8; mechanical stripper	GHB614	A	undelinted seed	0	8.66, 9.61	0.15, 0.16	8.81, 9.77
				3	8.67, 8.89	0.16, 0.18	8.83, 9.07
				7	8.05, 8.07	0.17, 0.15	8.22, 8.22
				14	7.25, 8.02	0.17, 0.19	7.42, 8.21
				21	8.13, 8.09	0.16, 0.13	8.29, 8.22
			gin byproduct	0	72.5, 83.2	0.50, 0.51	73.0, 83.7
				3	79.3, 83.9	0.70, 0.65	80.0, 84.6
				7	60.5, 68.6	0.64, 0.75	61.1, 69.4
				14	74.7, 68.4	0.96, 0.79	75.7, 69.2
				21	79.0, 83.8	1.27, 1.27	80.3, 85.1
		B	undelinted seed	7	7.30, 5.83	0.11, 0.09	7.41, 5.92
			gin byproduct	7	75.6, 74.9	0.86, 0.88	76.5, 75.8

[1] GHB614 also known as GlyTol® cotton.
[2] See Table C.1 for description of application scenarios.
[3] Combined glyphosate and AMPA; if residues were <LOQ (LOQ = 0.05 ppm), LOQ residues were assumed.

Table C.4.2. Summary of Residue Data.

Commodity	Application Scenario[3]	PHI (days)	Residue Levels[1] (ppm)						
			n	Min.	Max.	HAFT[2]	Median	Mean	Std. Dev.
Glyphosate									
undelinted seed	A	6-7	16	2.11	9.40	8.94	5.34	8.07	2.50
	B	6-7	16	1.00	10.1	7.22	2.78	5.83	2.40
gin byproduct	A	6-7	8	18.7	168	164	99.3	94.5	60.4
	B	6-7	8	8.68	196	189	75.2	87.0	69.2
AMPA									
undelinted seed	A	6-7	16	0.07	0.51	0.51	0.16	0.15	0.13
	B	6-7	16	<0.05	0.26	0.24	0.08	0.09	0.06
gin byproduct	A	6-7	8	0.15	1.74	1.59	0.70	0.79	0.56
	B	6-7	8	0.12	1.42	1.41	0.58	0.67	0.54
Combined Glyphosate and AMPA									
undelinted seed	A	6-7	16	2.19	9.49	9.02	5.53	8.22	2.55
	B	6-7	16	1.05	10.18	7.28	2.96	5.92	2.41
gin byproduct	A	6-7	8	18.9	169	166	100	95	60.8
	B	6-7	8	8.80	197	190	76.1	87.7	69.7

[1] For calculation of the HAFT, median, mean, and standard deviation, the LOQ was used for any residues reported as <LOQ.
[2] HAFT = Highest-Average Field Trial.
[3] A (post-emergent treatment only; total application rate of 7.94-8.07 lb ae/acre): three applications prior to layby (RTI = 10 days); two applications prior to 60% boll opening (RTI = 10 days); and single application 7 days prior to harvest; B (pre- and post-emergent treatment; total application rate of 7.94-8.10 lb ae/acre): single application 10 days before planting; application at planting; single pre-emergent application (7 days after planting); single application at layby; and single application 7 days prior to harvest.

D. CONCLUSION

Bayer CropScience submitted a glyphosate field trial study conducted with glyphosate-tolerant cotton (GHB614 cotton; GlyTol® cotton). Eight field trials were conducted during the 2006/2007 growing season in NAFTA Zones 2 (n=1), 4 (n=2), 6 (n=1), 8 (n=2), and 10 (n=2). Each field trial consisted of one untreated plot and two treated plots. The treated plots received either only post-emergent treatment (application scenario A; total application rte of 5.87-5.97 lbs ae/acre) or a combination of preplant, preemergent and postemergent treatment (application scenario B; 5.88-5.99 lbs ae/acre); Table C.1 is a summary of the application scenarios. Single control and duplicate treated cotton samples were harvested 6-7 days after the last application. Samples were harvested using a mechanical picker (n=2), mechanical stripper (n=2), or were harvested by hand (n=4). The samples were ginned by GLP Technologies (Navasota, TX) into undelinted seed (n=8) and gin byproducts (n=4; only samples harvested using a mechanical picker or stripper resulted in formation of cotton gin byproducts).

The undelinted seed and gin byproduct samples were analyzed for residues of glyphosate and AMPA using adequately validated method (storage interval as also been validated). Residues of glyphosate and AMPA in/on undelinted seed and gin byproducts following post-emergent treatment (application scenario A) or a combination of preplant, preemergent and postemergent treatment (application scenario B) were as follows (see Tables C.4.1 and C.4.2): (1) glyphosate in/on undelinted cottonseed: application scenario A - 2.11-9.40 ppm (average - 8.07 ppm); application scenario B - 1.00-10.1 ppm (average - 5.83 ppm); (2) glyphosate in/on cotton gin

byproducts: application scenario A - 18.7-168 ppm (average - 94.5 ppm); application scenario B - 8.68-196 ppm (average - 87.0); (3) AMPA in/on undelinted cottonseed: application scenario A - 0.07-0.51 ppm (average - 0.15 ppm); application scenario B - <0.05-0.26 ppm (average - 0.09 ppm); and (4) AMPA in/on cotton gin byproducts: application scenario A - 0.15-1.74 ppm (average - 0.79 ppm); application scenario B - 0.12-1.42 ppm (average - 0.67). Residue decline data were included following application using scenario A (n=2; no residue decline data were submitted for scenario B). These data were inconclusive for both undelinted seed and gin byproduct as one trial indicate a reduction in residues as the PHI increased form 0 to 21 days while the other trial resulted in approximately the same residues as the PHI increased form 0 to 21 days.

E. REFERENCES

•D183202, R. Perfetti, 27-Oct-1992
•MRIDs 40502601 and 40541304

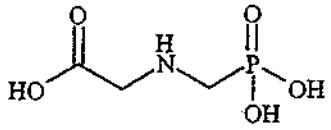
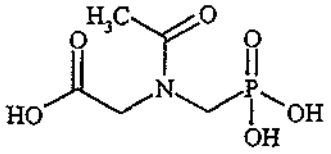
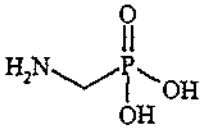
F. DOCUMENT TRACKING

RDI: RAB1 Chemists (7-May-2008)
T. Bloem:S10945:Potomac Yard 1:703-605-0217:7509P:RAB1

Attachment 1: Chemical Structures

Template Version June 2005

Attachment 1: Chemical Structures

Name	Structure
Glyphosate *N*-(phosphonomethyl)glycine	
N-acetyl-glyphosate (free acid) *N*-acetyl-*N*-(phosphonomethyl)glycine	
AMPA (free acid) aminomethyl phosphonic acid	

13544

R161365

Chemical Name:

PC Code:
HED File Code: 11000 Chemistry Reviews
Memo Date: 9/2/2008
File ID: 00000000
Accession #: 000-00-0126

HED Records Reference Center
9/4/2008

"Kari E. Mavian, United States" <kari.mavian@cheminova.com>

01/31/2008 12:51 PM

To Vickie Walters/DC/USEPA/US@EPA
cc
bcc
Subject Glyfos and Glyfos XTRA labels

HI Vickie,

Attached our the updated master labels for Glyfos and Glyfos XTRA. These labels specify GlyTol cotton in the glyphosate tolerant section.

Thank you for your help.

Best regards,
Kari

Kari E. Mavian
Senior Regulatory Affairs Manager
Cheminova, Inc.
1700 Route 23, Suite 300
Wayne, NJ 07470
tel: 973-305-6600 x233
fax: 973-305-1382

Please note new email address: kari.mavian@cheminova.com

GLYFOS XTRA - 4787-23 - 2008-1-31.pdf

Glyfos Herbicide 4784-31 - 2008-01-31.pdf

Bayer CropScience

5 December 2007
Document Processing Desk
Office of Pesticide Programs (7504P)
U. S. Environmental Protection Agency
Room S-4900, One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202-4501

Attn: Mr. James A. Tompkins (PM 25)

Subject: Residue Report in Support of Cheminova. Glyfos X-TRA (Reg. No. 4787-23) and Glyfos (Reg. No. 4787-31).

Dear Mr. Tompkins:

Bayer CropScience LP
2 T.W. Alexander Drive
Research Triangle Park, NC 27709
Phone: 919 549-2000

In a meeting held with the Agency in January of 2006, Bayer CropScience agreed to conduct a field residue program in support of the Cheminova applications regarding Glyfos X-TRA (Reg. No. 4787-23) and Glyfos (Reg. No. 4787-31). With this cover letter, please find
47320001 three copies of the consequent report (Glyphosate 480 EC - Magnitude of the Residue in/on Glyphosate Tolerant (GlyTol) Cotton - Bayer Report No. RA99X003). Also please find a printed and an electronic copy of a "study profile" developed for this study by Daussin and Associates, Inc., to facilitate the review process.

BSC conclusions from this study are as follows:

- Under an end use product application scheme that encompassed the maximum registered seasonal use rate for glyphosate to tolerant cotton (premergence + postemergence or postemergence only) at the desired preharvest interval (PHI) of 7 days, the highest HAFT (highest average field trial value) for either application scenario in/on undelinted GlyTol cotton seed was 9 ppm with an average value of 5.7 ppm and a standard deviation of 2.6. These values are well within the current tolerance established for glyphosate of 35 ppm in/on undelinted cotton seed.

- The HAFT value for the corresponding cotton gin by-product samples at the desired 7 day PHI was 189 ppm with an average value of 87 ppm and a standard deviation of 69.2. The highest single value for this matrix was 197 ppm (196 ppm of parent glyphosate and ~ 1.0 ppm of the AMPA metabolite). The current tolerance for glyphosate on this matrix is 175 ppm. The trial with highest gin by-product

residue value (Arkansas site) was **not** the trial that resulted in the highest undelinted seed value. The highest undelinted seed residue value from the specific Arkansas site (i.e., with the highest gin by-product value) was only 5 ppm as opposed to the HAFT for undelinted cotton seed of 9 ppm with an overall average value of 5.7 ppm. BCS suspects that this result represents a data point on the extreme upper end of the overall potential residue distribution that might occur on this matrix (i.e., residues of parent N-(phosphonomethyl) glycine in/on any glyphosate tolerant cotton). Based on the range of variation evident in this study, and in light of the commercial uses of cotton gin by-products as a low percentage component in blended animal feeds, BCS proposes (pending Agency review and concurrence) that the current tolerance is adequate to address residues of glyphosate found in/on all cotton gin by-products.

If you should have any questions or require additional information, please contact me at your earliest convenience.

Sincerely,

Mike See, Ph.D.
Registration Manager
Bayer CropScience
e-mail: mike.see@bayercropscience.com
Phone: 919-549-2913

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

January 15, 2008

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

BAYER CROPSCIENCE LP
2 T.W. ALEXANDER DRIVE
RESEARCH TRIANGLE PARK, NC 27709

Report of Analysis for Compliance with PR Notice 86-5

Thank you for your submittal of 11-JAN-08. Our staff has completed a preliminary analysis of the material. The results are provided as follows:

Your submittal was found to be in full compliance with the standards for submission of data contained in PR Notice 86-5. A copy of your bibliography is enclosed, annotated with Master Record ID's (MRIDs) assigned to each document submitted. Please use these numbers in all future references to these documents. Thank you for your cooperation. If you have any questions concerning this data submission, please raise them with the cognizant Product Manager, to whom the data have been released.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

January 15, 2008

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

OPP Decision Number: D-388510
EPA File Symbol or Registration Number: 4787-23
Product Name: GLYFOS X-TRA
EPA Receipt Date: 11-Jan-2008
EPA Company Number: 4787
Company Name: CHEMINOVA A/S

DIANE ALLEMANG
CHEMINOVA INC.
CHEMINOVA A/S
1600 WILSON BLVD., SUITE 700
ARLINGTON, VA 22209-2510

SUBJECT: Receipt of Registration Amendment Subject to Registration Service Fee

Dear Registrant:

The Office of Pesticide Programs has received your amendment and certification of payment. If you submitted data with this application, the results of the PRN-86-5 screen will be communicated separately. During the administrative screen, the Office of Pesticide Programs has determined that this Action is subject to a Pesticide Registration Service Fee as defined in the Pesticide Registration Improvement Act.

The Action has been identified as Action Code: R350

NON-FAST TRACK (CHANGES TO REI;PPE;PHI;RATE AND NUMBER OF APPLICATIONS;ADD AERIAL APPLICATION;MODIFY GW/SW ADVISORY STATEMENT;

No additional payment is due at this time.

If you have any questions, please contact the Pesticide Registration Service Fee Ombudsman at (703) 305-6249.

Sincerely,

Front End Processing Staff
Information Technology & Resources Management Division

Fee for Service

{822661"~

This package includes the following

- ○ New Registration
- ◉ Amendment

X Studies? ☐ Fee Waiver?

volpay % Reduction: ___

for Division

- ○ AD
- ○ BPPD
- ◉ RD

Risk Mgr. 25

Receipt No. S-	822661
EPA File Symbol/Reg. No.	4787-23
Pin-Punch Date:	1/11/2008

☐ This item is NOT subject to FFS action.

Action Code:

Requested: R-350

Granted: R-350

Amount Due: $ 10,880

Parent/Child Decisions:

☒ Inert Cleared for Intended Use ☒ Uncleared Inert in Product

Reviewer: Tompkins Date: 1/15/08

Remarks:

CHEMINOVA

Cheminova, Inc.
Oak Hill Park
1700 Route 23, Suite 300
Wayne, New Jersey 07470

Phone: 973-305-6600
Fax: 973-305-1382
Customer service:
1-800-548-6113

January 11, 2008

Jim Tompkins, Product Manager, Team 25
Document Processing Desk (AMEND)
Office of Pesticide Programs
U.S. Environmental Protection Agency
Room 266A, Crystal Mall #2
1801 South Bell Street
Arlington, VA 22202

Subject: **Glyfos® X-TRA Herbicide EPA Reg. No. 4787- 23**
Glyfos® Herbicide EPA Reg. No. 4787-31
Label Amendment

Dear Mr. Tompkins,

We are submitting this amendment for Cheminova's Glyfos X-TRA Herbicide (EPA Reg. No. 4787-23) and Glyfos Herbicide (EPA Reg. No. 4787-31) to include Bayer's GlyTol cotton to our label. We have chosen to take this opportunity to revise our labels to change references to "Roundup Ready" crops to "glyphosate tolerant" crops.

We are simultaneously submitting the data Bayer developed to support their GlyTol cotton, along with a letter of authorization from Bayer allowing us to rely on these data.

Please find enclosed the following in support of this amendment:

- Application for amendment for each product
- Certification with respect to citation of data form for each product
- Data matrix for each product
- Five copies of draft labeling for each product
- Letter of authorization from Bayer
- Bayer's submission of its GlyTol cotton data

If you have any questions or require any additional information, please contact me at 973-305-6600 x233 or by e-mail at kem.us@cheminova.com.

Sincerely,

Kari E. Mavian
Senior Regulatory Affairs Manager

Online Payment

Online Payment

Step 3: Confirm Payment 1 | 2 | 3

Thank you.
Your transaction has been successfully completed.

Pay.gov Tracking Information

Application Name: PRIA Service Fees
Pay.gov Tracking ID: 24UG9NCN
Agency Tracking ID: 74038173080
Transaction Date and Time: 01/11/2008 07:39 EST

Payment Summary

Account Holder Name: Cheminova
Payment Amount: $13,600.00
Account Type: Business Checking
Routing Number: 026010786
Account Number: ******3001

Payment Date: 01/14/2008
Decision Number:
Registration Number: 4787-23

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

FAX COVER

To: Diane Allemang Date: January 14, 2008

Recipient Fax Number: 703-373-8887

From: Geri McCann, Front End Processing Phone: 703-605-0716

Return Fax Number: 703-305-7670

Number of Pages (including the cover sheet) 3

COMMENTS:

Ms Allenmang,

The following pages are from the submission we logged into the system on Friday, January 11, 2008. If you have any questions please feel free to contact this office.

Thank you.

Geri McCann

CHEMINOVA

Cheminova, Inc.
Washington Office
1600 Wilson Boulevard
Suite 700
Arlington, VA 22209

Phone: (703) 373-8883
Fax: (703) 373-8887

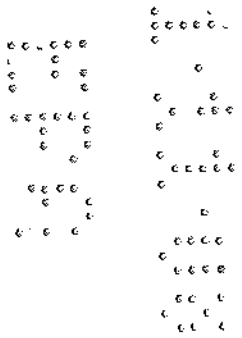
TO: Document Processing Office

DATE: January 11, 2008

Please complete the attached form and then return a copy to Diane Allemang of Cheminova, Inc., via telefacsimile at (703) 373-8887.

Thank you.

Enclosure



SUBMISSION TO EPA'S OFFICE OF PESTICIDE PROGRAMS
DOCUMENT PROCESSING DESK

Please complete this form and return to the attention of Diane Allemang of Cheminova, Inc. via telefacsimile at (703) 373-8887.

Submitter: Cheminova A/S [EPA Company No. 4787]
Bayer CropScience [EPA Company No. 264]

Chemical: Glyphosate

Submission Items:

- Label amendment for Glyfos® X-TRA Herbicide (4787-23)
- Label amendment for Glyfos® Herbicide (4787-31)
- Residue data to support Bayer's Glyphosate Tolerance Cotton

Submission Date: January 11, 2008

Received By: _____ 1/14/08

[To Be Completed By EPA]

Date/Time Received: Between 3:00 and 4:00 pm

[To Be Completed By EPA] January 11, 2008

Please read instructions on reverse before completing form. Form Approved, OMB No. 2070-0060, Approval expires 05-31-98

EPA United States Environmental Protection Agency Washington, DC 20460

☐ Registration ☒ Amendment ☐ Other

OPP Identifier Number

Application for Pesticide - Section 1

1. Company/Product Number	2. EPA Product Manager	3. Proposed Classification
4787-23	J. Tompkins	☒ None ☐ Restricted
4. Company/Product (Name)	PM#	
Glyfos X-TRA Herbicide	25	

5. Name and Address of Applicant *(Include ZIP Code)*
Cheminova Inc.
1700 Route 23, Suite 300
Wayne, NJ 07470

☐ *Check if this is a new address*

6. Expedited Review. In accordance with FIFRA Section 3(c)(3)(b)(I), my product is similar or identical in composition and labeling to:
EPA Reg. No. _____
Product Name _____

Section – II

☒ Amendment - Explain below.
☐ Resubmission in response to Agency letter dated _____
☐ Notification - Explain below.
☐ Final printed labels in response to Agency letter dated _____
☐ "Me Too" Application
☐ Other - Explain below

Explanation: Use additional page(s) if necessary. (For Section I and Section II.)

***Application for Label Amendment**
***Category R350/55: $10,880 Amendment requiring data review in Science Divisions**
***Contact: Kari E. Mavian: kem.us@cheminova.com or fax: 973-305-1382**

Section – III

1. Material This Product Will Be Packaged In:

Child-Resistant Packaging	Unit Packaging		Water Soluble Packaging		2. Type of Container
☐ Yes* ☒ No	☐ Yes ☒ No		☐ Yes ☒ No		☐ Metal ☒ Plastic ☐ Glass ☐ Paper ☐ Other (Specify)
**Certification must be submitted*	If "Yes" Unit Packaging wgt.	No. per container	If "Yes" Package wgt.	No. per container	

3. Location of Net Contents Information	4. Size(s) Retail Container	5. Location of Label Directions
☒ Label ☒ Container	1 gallon - bulk	☒ On Label ☐ On labeling accompanying product

6. Manner in Which Label is Affixed to Product ☒ Lithograph ☒ Paper glued ☒ Stenciled ☐ Other _____

Section – IV

1. Contact Point *(Complete items directly below for identification of individual to be contacted, if necessary, to process this application)*

Name	Title	Telephone No. (Include Area Code)
Kari E. Mavian	Senior Regulatory Affairs Manager	973-305-5600, X 233

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statements may be punishable by fine or imprisonment or both under applicable law.

2. Signature	3. Title	6. Date Application Received
Kari E. Mavian	Senior Regulatory Affairs Manager	(Stamped)
4. Typed Name	5. Date	
Kari E. Mavian	January 11, 2008	

EPA Form 8570-1 (Rev. 8-94) Previous editions are obsolete White- EPA File Copy (original) Yellow- Applicant Copy

5 December 2007
Document Processing Desk
Office of Pesticide Programs (7504P)
U. S. Environmental Protection Agency
Room S-4900, One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202-4501

Attn: Mr. James A. Tompkins (PM 25)

Subject: Residue Report in Support of Cheminova. Glyfos X-TRA (Reg. No. 4787-23) and Glyfos (Reg. No. 4787-31).

Dear Mr. Tompkins:

Bayer CropScience LP
2 T.W. Alexander Drive
Research Triangle Park, NC 27709
Phone 919 549-2000

In a meeting held with the Agency in January of 2006, Bayer CropScience agreed to conduct a field residue program in support of the Cheminova applications regarding Glyfos X-TRA (Reg. No. 4787-23) and Glyfos (Reg. No. 4787-31). With this cover letter, please find three copies of the consequent report (Glyphosate 480 EC - Magnitude of the Residue in/on Glyphosate Tolerant (GlyTol) Cotton - Bayer Report No. RA99X003). Also please find a printed and an electronic copy of a "study profile" developed for this study by Daussin and Associates, Inc., to facilitate the review process.

BSC conclusions from this study are as follows:

- Under an end use product application scheme that encompassed the maximum registered seasonal use rate for glyphosate to tolerant cotton (premergence + postemergence or postemergence only) at the desired preharvest interval (PHI) of 7 days, the highest HAFT (highest average field trial value) for either application scenario in/on undelinted GlyTol cotton seed was 9 ppm with an average value of 5.7 ppm and a standard deviation of 2.6. These values are well within the current tolerance established for glyphosate of 35 ppm in/on undelinted cotton seed.

- The HAFT value for the corresponding cotton gin by-product samples at the desired 7 day PHI was 189 ppm with an average value of 87 ppm and a standard deviation of 69.2. The highest single value for this matrix was 197 ppm (196 ppm of parent glyphosate and ~ 1.0 ppm of the AMPA metabolite). The current tolerance for glyphosate on this matrix is 175 ppm. The trial with highest gin by-product

residue value (Arkansas site) was not the trial that resulted in the highest undelinted seed value. The highest undelinted seed residue value from the specific Arkansas site (i.e., with the highest gin by-product value) was only 5 ppm as opposed to the HAFT for undelinted cotton seed of 9 ppm with an overall average value of 5.7 ppm. BCS suspects that this result represents a data point on the extreme upper end of the overall potential residue distribution that might occur on this matrix (i.e., residues of parent N-(phosphonomethyl) glycine in/on any glyphosate tolerant cotton). Based on the range of variation evident in this study, and in light of the commercial uses of cotton gin by-products as a low percentage component in blended animal feeds, BCS proposes (pending Agency review and concurrence) that the current tolerance is adequate to address residues of glyphosate found in/on all cotton gin by-products.

If you should have any questions or require additional information, please contact me at your earliest convenience.

Sincerely,

Mike See, Ph.D.
Registration Manager
Bayer CropScience
e-mail: mike.see@bayercropscience.com
Phone: 919-549-2913

Form Approved OMB No. 2070-0060

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, SW
Washington, DC 20460

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Do not send the completed form to this address.

Certification with Respect to Citation of Data

Applicant's/Registrant's Name, Address and Telephone Number	EPA Registration Number/File Symbol
Cheminova A/S c/o Cheminova, Inc.; Oak Hill Park; 1700 Route 23; Wayne, NJ 07470 Telephone: (973) 305-6600, x233	**4787-23**
Active ingredient(s) and/or representative test compound(s)	Date
Isopropylamine salt of glyphosate, N-(phosphonomethyl) glycine	**January 11, 2008**
General Use Pattern(s) (list all those claimed for this product using 40 CFR Part 158)	Product Name
Terrestrial Food Crop, Terrestrial Nonfood Crop	**Glyfos® X-TRA Herbicide**

NOTE: If your product is a 100% repackaging of another purchased EPA-registered product labeled for all the same uses on your label, you do not need to submit this form. You must submit the Formulators Exemption Statement (EPA Form 8570-27).

☐ I am responding to a Data-Call-In Notice, and have included with this form a list of companies sent offers of compensation (the Data Matrix form should be used for this purpose)

SECTION I: METHOD OF DATA SUPPORT (Check one method only)

☐ I am using the cite-all method of support, and have included with this form a list of companies sent offers of compensation (the Data Matrix form should be used for this purpose).

☒ I am using the selective method of support (or cite-all option under the selective method), and have included with this form a completed list of data requirements (the Data Matrix form must be used).

SECTION II: GENERAL OFFER TO PAY

[Required if using the cite-all method or when using the cite-all option under the selective method to satisfy one or more data requirements]

☐ I hereby offer and agree to pay compensation, to other persons, with regard to the approval of this application, to the extent required by FIFRA.

SECTION III: CERTIFICATION

I certify that this application for registration, this form for reregistration, or this Data-Call-In response is supported by all data submitted or cited in the application for registration, the form for reregistration, or the Data-Call-In response. In addition, if the cite-all option or cite-all option under the selective method is indicated in Section I, this application is supported by all data in the Agency's files that (1) concern the properties or effects of this product or an identical or substantially similar product, or one or more of the ingredients in this product; and (2) is a type of data that would be required to be submitted under the data requirements in effect on the date of approval of this application if the application sought the initial registration of a product of identical or similar composition and uses

I certify that for each exclusive use study cited in support of this registration or reregistration, that I am the original data submitter or that I have obtained the written permission of the original data submitter to cite that study.

I certify that for each study cited in support of this registration or reregistration that is not an exclusive use study, either: (a) I am the original data submitter; (b) I have obtained the permission of the original data submitter to use the study in support of this application; (c) all periods of eligibility for compensation have expired for the study; (d) the study is in the public literature; or (e) I have notified in writing the company that submitted the study and have offered (i) to pay compensation to the extent required by sections 3(c)(1)(F) and/or 3(c)(2)(B) of FIFRA; and (ii) to commence negotiations to determine the amount and terms of compensation, if any, to be paid for the use of the study.

I certify that in all instances where an offer of compensation is required, copies of all offers to pay compensation and evidence of their delivery in accordance with sections 3(c)(1)(F) and/or 3(c)(2)(B) of FIFRA are available and will be submitted to the Agency upon request. Should I fail to produce such evidence to the Agency upon request, I understand that the Agency may initiate action to deny, cancel or suspend the registration of my product in conformity with FIFRA.

I certify that the statements I have made on this form and all attachments to it are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Signature	Date	Typed or Printed Name and Title
Kari E Mavian	January 11, 2008	Kari E. Mavian, Senior Regulatory Affairs Manager

EPA Form 8570-34 (9-97) Electronic and Paper versions available. Submit only Paper version.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W.
WASHINGTON, D.C. 20460

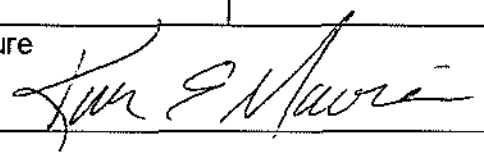
Form Approved OMB No. 2070-0060

DATA MATRIX

Date: **January 11, 2008**	EPA Reg. No./File Symbol: **4787-23**	Page 1 of 1
Applicant's/Registrant's Name & Address: **Cheminova A/S** **c/o Cheminova, Inc.,** **1700 Route 23, Suite 300** **Wayne, NJ 07470**	Product **Glyfos X-TRA Herbicide**	

Ingredient: **Glyphosate**

Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
860.1500	Crop Field Trials	Submitted t-9-08	Bayer	PER	

Signature 	Name and Title **Kari E. Mavian, Senior Regulatory Affairs Manager**	Date **January 11, 2008**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W.
WASHINGTON, D.C. 20460

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DATA MATRIX

Date: **January 11, 2008**	EPA Reg. No./File Symbol: **4787-23**	Page 1 of 1
Applicant's/Registrant's Name & Address: **Cheminova A/S** **C/o Cheminova, Inc.,** **1700 Route 23, Suite 300** **Wayne, NJ 07470**	Product **Glyfos X-TRA Herbicide**	

Ingredient: **Glyphosate**

Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
			Bayer	PER	

Signature: Kari E. Mavian

Name and Title: **Kari E. Mavian, Senior Regulatory Affairs Manager**

Date: **January 11, 2008**

Bayer CropScience

5 December 2007
Document Processing Desk
Office of Pesticide Programs (7504P)
U. S. Environmental Protection Agency
Room S-4900, One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202-4501

Attn: Mr. James A. Tompkins (PM 25)

Subject: Cheminova. Glyfos X-TRA (Reg. No. 4787-23) and Glyfos (Reg. No. 4787-31). Letter of Authorization

Dear Mr. Tompkins:

Bayer CropScience authorizes the USEPA to rely on the attached residue chemistry report (Glyphosate 480 EC – Magnitude of the Residue in/on Glyphosate Tolerant (GlyTol) Cotton. Bayer Report No. RA99X003) and supporting "study profile" developed by Daussin and Associates, Inc., in support of Cheminova applications regarding Glyfos X-TRA (4787-23) and Glyfos (4787-31).

Bayer CropScience LP
2 T.W. Alexander Drive
Research Triangle Park, NC 27709
Phone: 919 549-2000

This authorization is qualified to the extent however that:

1. the applicant or any other person except your Agency shall not have access to said data unless specifically authorized in writing by Bayer CropScience
2. this authorization shall not be construed as authorization to use or consider said data, directly or indirectly, in support of any subsequent applications, and
3. this authorization shall not be transferred by the applicant in any manner whatsoever without express prior consent of Bayer CropScience.

If you should have any questions or require additional information, please contact me at your earliest convenience.

Sincerely,

Mike See, Ph.D.
Registration Manager
Bayer CropScience
e-mail: mike.see@bayercropscience.com
Phone: 919-549-2913